Textile World

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CONTENTS APRIL, 1935

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MANAGEMENT

Good News Is Here! (*Editorial*) 79
The Editor Says 80
Washington Says 81
Textile Institute in Canada Coordinates Association Activity.. 82
Analysis of Three Principal Methods to Control Output..... 85
Guide to 31st Annual Knitting Arts Exhibition..... 95

MERCHANDISING

Regain World Markets with Cotton Bounty Plan—Jefferson... 83
5000 Retail Stores in Nationwide "Silk Review"..... 86
Abbreviated Shorts for Men Take Market by Storm..... 107

MATERIALS

Single-Bath Hosiery Dyeing with Sulphon Cyanine Black B.... 110
Buy Coal on Basis of Heat Units per Dollar..... 119

MILL ENGINEERING

Tragic Future for Mill Unable to Carry Out Modernization.... 84
Revamping Bleach-House Equipment for Efficiency..... 92
New Machinery and Processes..... 128

METHODS

Analysis of Cottons Selected for College Style Show..... 87
Need for Variable Speed in Ring Spinning and Twisting..... 88
Influence of Twist on Diameter, Dullness, etc., of Silk Yarn... 90
Pebble and Take-up Determined by Throwster's Soaking.... 94
Advance in Technic Improves Circular Hosiery..... 99
Style and Quality Lead Half-Hose Parade..... 100
Knee Length Among Recent Full-Fashioned Changes..... 102
Aggressive Effort Brings New Life to Knit Outerwear..... 104
Corsets of Today—Analysis of Three Knitted Types..... 106
Simplified Routine for Finishing Jersey Cloth..... 108
"Shooting" the Loom with Slow Motion Pictures..... 111
Gyrators to Drafts Discussed by Georgia Executives..... 120
"S" and "Z" Applauded by D-13 at Providence..... 121

NRA CODE
GRAPHIC ARTS INDUSTRY

KNITTING ARTS EXHIBITION NUMBER

Knitting Features, pages 95-110

Index on page 141

DEPARTMENTS

The Overseers' Corner 122
Questions and Answers 124
Personal Page 126
New Machinery and Processes 128
New Publications and Business News 130
TEXTILE WORLD Analyst 131
Quotations 146

INDUSTRY BRANCHES

Cotton Digest 132
Wool Digest 134
Rayon Digest 136
Silk Digest 138
Knitting Digest 140
Processing Digest 142
Engineering Digest 144

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Textile World

April, 1935

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Editor: DOUGLAS G. WOOLF

GOOD NEWS IS HERE!

SELF-GOVERNMENT is off to a new start in textiles. The National Industrial Recovery Board, in creating machinery for prompt adjustment of production to demand in the cotton-textile industry, has established what might well be a model for all branches of the industry. It has taken the first step in the program which we outlined on this page last month; incidentally this step is also the one which we high-lighted in our Annual Number as the "most important" single thing the industry could and should do during 1935. Finally, since the Board took this action on the recommendation of its Textile Planning Committee, we are confirmed in our judgment, expressed last month, that "one more committee, of this particular type, isn't so bad."

From the industry's standpoint, the new order is sound because it permits sub-groups to determine just what steps they should take to establish a better production-demand balance, and assures them of being able to put such determination into action promptly, while the emergency exists. The unfairness of blanket policies applied to all groups, in which conditions may vary widely, is therefore eliminated.

On the other hand the interests of employees and of the general public are fully protected by the appointment of a special Research and Planning Committee (none of whose members is to have any interest in any unit of the industry) whose function it is to investigate facts, to formulate proposed action, to observe effects, and to report to the NIRB. Finally, there is further safeguard in the fact that action by the Code Authority based on a recommendation of this Research and Planning Committee, will always be subject to the approval of the NIRB.

Despite all this, the expected happened. Francis Gorman let out a howl. In fact, this time even "President" Thomas McMahon joined in the chorus. The order is an "outrage," they state; it means that textile workers now will have the 30-hour week with a 25% pay reduction. "It looks to us like inverted economics," they whine.

Well it would—to them.

It seems silly to have to go all through this again, but one must be patient in cases like this. So once more: This order does not mean the reduction, by even as much as one yard, of the quantity of textiles consumed by the American people. And that quantity is the only thing in which the industry and its workers are interested. In fact, goods produced but not consumed, merely demoralize the market and reduce the market price and consequently the cash available for wages. All this order does is to enable the various groups to check such demoralization when it first appears, instead of waiting until it is too late.

We wish we had the ability to arrange this little statement on economics in the form of a Mother Goose rhyme and to set it to a simple tune. We'd have a record made and present it to Messrs. Gorman and McMahon with our compliments.

The Editor Says:

HERE is a set of questions propounded by the Associated Business Papers, Inc.—and our answers:

Q. *What is the prevailing attitude of companies in the field you serve to the proposed Wagner Labor Bill?*

A. The overwhelming sentiment in the textile industry is opposed to this bill.

Q. *Is such labor legislation believed workable?*

A. Labor legislation of this particular type is not only believed unworkable but—far more important—its enactment would foment a new and more bitter series of labor disputes than any we have known under the NRA to date.

Q. *Is there an existing need for such legislation in the companies covered by your publication?*

A. There is no need for such legislation in the textile field. The Textile Labor Relations Board, established by the President, is doing an adequate job in this direction.

Q. *Have any alternative plans or suggestions been brought to your attention which would solve the existing problem of the workability of Section 7a?*

A. The principal need in connection with Section 7a is inclusion of definite specifications regarding the rights of employers and also regarding the rights of employees who do not belong, or do not wish to belong, to the A. F. of L. During the textile strike last fall, both these groups were intimidated by an organized minority, operating through "flying squadrons," with the result that, in addition to bloodshed and destruction of property, there ensued a heavy loss of income to both employers and employees. Certainly, since these two groups are in the majority, they need protection against a militant minority. During the strike, an organization representing less than one-fifth of the workers terrorized the other four-fifths, as well as the employers. A clear statement, in Section 7a, of the rights of these two latter groups is absolutely essential unless we wish to legalize a rule of terrorism.

■

And Don't Forget the Date

WE understood that the U. T. W. had a public relations man. He must either be on vacation or else have no influence with Francis Gorman because it is hard to see how any self-respecting publicity expert could willingly permit Gorman to release his letter to the President, members of the Cabinet, members of the House and Senate, chairmen of the Textile and National Labor Relations Board—and points West.

The letter started off with the usual bunk about the curtailment order cutting wages 25%. (We dispose of this brand of "economics" in the editorial on the preceding page.) It then goes on, by slow stages, to the amazing statement: "I am not conveying any threat of immediate strike, but I know that if these conditions continue, a strike must come at a not far distant date." (Figure that one out; it's too much for us.)

Then Gorman begins to whine. And the spectacle of a man whining is never a pretty thing. "We are not met and dealt with in frankness," he cries. "There seems a good deal of feeling that the union is a transient thing. Employers send their questions through the recovery board, as if they were ghostly persons talking at a distance to other ghostly persons through a medium. We are tired of that."

"We are tired of that." Isn't that some public statement for an adult to make?

Then Gorman immediately drops from the high voice to the low voice. Being "tired of that," he "proposes." "We propose," he intones—and his propositions are eight in number. Yes, recognition of the union is one of them; the other seven don't count to Gorman, we are sure, but make good window-dressing.

Finally, he goes melodramatic. "Thunder off-stage" would be the stage direction for his concluding paragraph: "Since there seems no power outside of Congress able to bring order into the chaotic house of the vandals and autocrats of the cotton textile industry we now propose and demand Congressional action."

Hear ye, all ye vandals and autocrats! With a whine and a grunt and a roar, this little man will blow your house down. With his 10 or 15% representation in your industry, he will smite you.

P. S. The letter was dated April 1.

■

Whither NRA?

OUT of all the babel that has accompanied the NRA discussion during the last month, it seems necessary to isolate some one fact that means something. In our opinion, that one fact—insofar as the textile industry is concerned—is: The majority of textile manufacturers do not want a return to the days when there was no bottom to wages and no ceiling to hours. They recall that, in those days, there was no premium on good management and good equipment because the inefficient competitor could chisel his pay-roll to meet any differential.

A minority, we know, will dispute this statement and say that the industry is tired of NRA and all its works. But we believe they are misinformed.

So isn't the above fact the one to keep in mind? Instead of being inarticulate, why should not the majority of the industry add its support to the statement of the Consumers' Goods Industries Committee that "to abolish the codes now would check recovery, destroy confidence, and probably create another downward spiral of bottomless deflation and financial chaos"?

Beyond that, why should not the same majority fight to make the new NRA as simple, as free from bureaucratic influence, and as helpful to individual initiative, as is compatible with the above-stated major objective?

It's always easier to say no than yes, but usually a yes goes further.

■

Preserve Those Records!

AN important by-product of the NRA has been the compilation of a vast amount of factual information concerning the various industries of the country. These data were presented at the various hearings held during both code-making and code-amending days. They analyze the different fields from the standpoint of the

industry itself, organized labor, and the consumer—since all these viewpoints have been offered at the hearings.

The transcripts of these hearings are now in typewritten form. They are bulky and perishable; expensive to get and impractical to handle. They should be put into permanent printed form.

As we understand it, special legislation would have to be introduced to insure this. We suggest that textile manufacturers urge their Senators and Representatives to take steps toward this end.

As we attended the code hearings in Washington, we were continually impressed by the vital statistics which were being presented. They gave a picture of industry not previously available. The loss of this picture, through neglect, would be tragic.

■

Wallace Has the Answer

IF we were asked to draw up a specification for a plan of action which would build up antagonism against, and ultimately help to defeat, the Administration's program, we would offer this simple formula:

"Just do what Secretary Wallace does."

The Republican party couldn't hire a better propagandist.

Mr. Wallace has been at his "best" during the last month.

To an industry and its workers harassed by many burdens, of which the cotton processing tax is one, he hurled the casual statement that it is "much more probable that there will be an increase than a decrease" in this tax. In a statement headed "Effect of Cotton Tax Explained by A.A.A.," released March 27, the Secretary's Department offers an "explanation" which, to the best of our knowledge, does not contain one *accurately* interpreted point of any importance. We call attention, in the Cotton Digest of this issue, to one of the *inaccurate* interpretations. G. H. Dorr, president of the Cotton-Textile Institute, has exposed a number of others.

We believe that Lincoln Baylies summed up the bitterness of cotton manufacturers as a group when he said: "It is about time that the textile industry ceased to be the No. 1 guinea pig for the New Deal laboratory."

And this same industry, Mr. Secretary, is the one that has given the Administration more whole-hearted support than any other. Even as politics, your show seems to be pretty poor!

The Greenville Show

THE SOUTHERN TEXTILE EXPOSITION, which was taking place at Greenville, S. C., as this issue went to press, will be reported in the May issue of* TEXTILE WORLD. *The report will include not only a technical survey of the equipment, accessories and supplies shown there, but details of the many important meetings that were held during the week.

In the May issue, also, will appear the report of the Knitting Arts Exhibition and related meetings to be held at Philadelphia during the week beginning Apr. 22.

Washington Says:

By Paul Wooton

Washington Correspondent, TEXTILE WORLD

EDITOR'S NOTE: Since the following was written, and as this issue was going to press, the textile pot in Washington boiled with renewed vigor. Southern Congressmen urged the President to (1) eliminate the processing tax; (2) continue 12c. loans on current-year cotton crop; and (3) pay Government bounty of $10 a bale on exports of cotton. New England Congressmen were to meet with New England Governors and then the latter were to see the President. "Save the Cotton-Textile Industry!" is the rallying-cry, and "Eliminate the Processing Tax!" is the principal means of salvation suggested. Threats of removal of cotton manufacturing plants and of cotton gins to South America fortified the stand of the protestants. The political aspects of the situation were weighing on the Administration. From every standpoint, it looked as if "something might be done about it."

RATIONALIZATION of the whole question of consumption of and demand for textiles is the principal objective of the various efforts being put forth in Washington in behalf of the industry. It is believed that the orderly movement of large inventories to market can be stimulated and that many of the uncertainties that prevent the carrying of representative and adequate stocks can be removed.

No reliance is being placed on the possible removal of processing taxes. It is apparent that the Administration has no idea of abandoning its adjustment program and no other way is seen in which the vast sums needed can be raised.

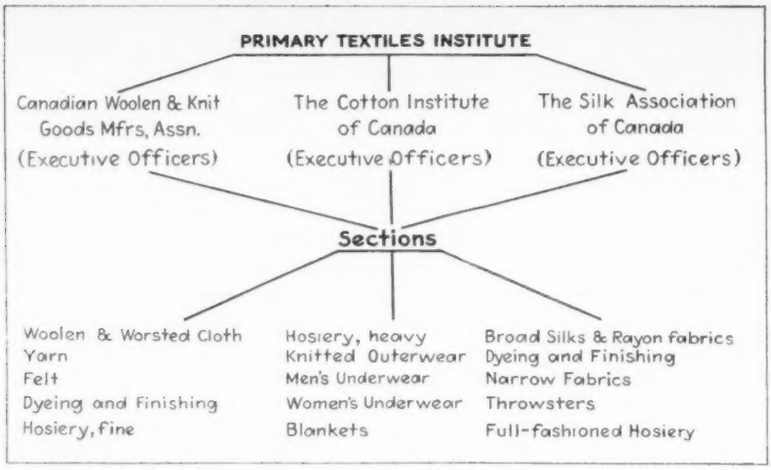
With the setting up of the Research and Planning Committee and the Textile Planning Committee, provision is made for the study of both emergency and long-time problems by well-informed, detached groups that are not directly concerned with the results of the steps that will be recommended.

One of the principal problems to be considered is that of over-capacity. It is expected that the matter of consolidations will be given consideration. If sub-marginal farmers can be moved it ought to be no harder to move technical workers to the points of most efficient production.

While the most important immediate problem is to remove the fear of price decline, studies of distribution economies and of export situation will also be pressed.

It is known that the textile committees are placing no reliance on a possible embargo of Japanese imports. It is recognized that the good neighbor policy of the Administration, along with the strong desire for the consummation of reciprocal trade agreements, precludes the possibility of drastic action. It is believed that an agreement can be reached with Japan, as has been done in regard to other imports, that will prevent a demoralization of our domestic market. It is pointed out that the volume of Japanese imports is insignificantly small. Most industries pay no attention to imports of less than 5% of domestic production but in its peculiarly sensitive state a small volume of imports has had a disproportionate influence on buyers of textiles. Steps already are being taken to improve that situation. Chances are thought to favor cooperation on the part of Japan.

Textile Institute



In Canada coordinates associational activities

◆ *As noted in these columns last month, there has been formed in Canada the Primary Textiles Institute to coordinate the activities of the existing associations in the industry. Our interest in it arises from the fact that it is in the direction of our own editorial appeal for an American Textile Institute—or at least some coordinating council. Consequently we have asked Major Douglas Hallam, executive secretary of the new Canadian organization, to explain its purposes and scope. The attached article is based on information received from Major Hallam.*—Editor.

THE Primary Textiles Institute covers, as the name implies, the primary textile industries and therefore does not include the needle trades. There were three organizations operating in the field: Canadian Woolen & Knit Goods Manufacturers Association, Silk Association of Canada, and Cotton Institute of Canada. It was felt in the industry that, if the activities of the three organizations were coordinated, efficiency could be increased and more useful work accomplished. With these ends in view, the Primary Textiles Institute was formed with a head office in Toronto, and a branch office in Montreal. These are the two logical centers of the industry in Canada.

The Primary Textiles Institute has six members only, namely, the president and vice-president of each of the three associations listed above.

The constitution of the new Institute says:

"*Object:* The promotion and maintenance of the interests of the primary textile industries in Canada—wool, silk, cotton, rayon—in all their branches, by concerted and harmonious action and by the interchange of ideas, and by all other proper means. . . .

"Each of the three groups [referred to above] will be operated under their own particular constitutions and by-laws, and by their own officers and under their own names. The business of each respective group will be conducted on its own letterhead, and each group will be separately listed in telephone directories and on the doors of offices."

This gives an elastic organization which may be summarized as shown on the accompanying chart.

It will be noted that there are 15 sections of the Institute. Each section of the association has its own chairman who calls meetings and is also on the executive committee of his association. Sections therefore meet to discuss matters of interest to them; if the matter is of importance to the entire group in the association it is brought up at an executive meeting where all branches of the industry are represented; if it is of importance to the entire primary textile industries it is taken up at a meeting of the Primary Textiles Institute.

Types of Work Done

Some idea of the work which is being done may be obtained from the following rough summary:

Gradual arrangements so that the vital statistics of the industry—on production, imports and consumption—may be simplified and brought to a comparable basis where they will be of service to the industry.

Monthly exchange, by sections, of statistics on production, deliveries and stock on hand, also machinery installed, etc., so that any group will have a real background against which to operate.

Issuing of accurate information to the press.

Exchange, among sections, of quick ledger information regarding credits; this is work that does not duplicate that of any commercial credit organizations.

Examination of legislation—Dominion or Provincial—affecting the industry.

Here is a practical example of how it works: The Canadian Tariff Board hears applications from British manufacturers for reductions in the Canadian tariff. As the findings are based on the cost of production in the two countries, it is considered of advantage to the trade to have all experience and technical knowledge pooled for the benefit of the entire industry.

"This organization has been a slow growth and we want to go slowly," concludes Major Hallam. "The services rendered have been built up through trial and error in small groups—those which were useful being kept and expanded to other groups, and those which were not useful being abandoned. There are no revolutionary ideas to be offered to our members, but the industry feels* that in these unsettled times, and with the social legislation forecast for Canada, the coordination of opinion and effort will prove more and more valuable."

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* So do we.—*Editor.*

What to Do About It?

By Floyd W. Jefferson
Iselin-Jefferson Co., New York

Regain world markets through cotton bounty plan, says Jefferson

IT IS OBVIOUS that with our export markets lost, and with our costs pyramided through short hours, higher wages and processing taxes, and with the actual importation of Japanese textiles, and the threat of additional cheap yardage coming through the customs, consumption of American-made cotton goods has dropped to a point where it is suicidal to increase our unsold stocks in the face of the vicious cutthroat competition which has followed these conditions.

Let us admit that if we are to manufacture under present NRA regulations, without some bounty for export, we must adjust to home consumption.

Curtailment offers the only means toward that adjustment. Voluntary curtailment is not feasible. It must be mandatory and how is it to be accomplished?

Straight percentage curtailment and sealing of machinery have their advocates, and there are those who still feel that both capital and labor would fare better if the industry adopted at least temporarily a weekly 48-hour shift limited to daytime only.

It is our contention, however, that all of these measures of expediency looking to curtailment could be avoided if we would turn our attention to the vital necessity of regaining our world markets.

There has been presented by S. C. Lamport a plan which has great merit. Briefly, it proposes that, in lieu of a direct subsidy, the Government agree to sell to American cotton mills, for manufacture into goods exclusively for export, a part of the Government's holding of cotton at about 50% of the existing market price.

This plan, if adopted, would furnish the incentive for the expansion of our export trade and would enable our manufacturers to meet in foreign markets the competition of Japan and other nations, as the tolerance in cotton would offset the wage differential which has counted so heavily against us.

It is obvious that the Government, by this bounty, would not lose the difference between market price and tolerance basis because additional employment would take thousands off relief, and plants in operation would produce taxable profits, and absorption of surplus cotton would eliminate carrying charges. The turning of the great cotton-textile manufacturing business from a debit industry into a profit-producing one would probably produce more revenue than the total of the proposed subsidy.

The plan would enable us to regain not only our South and Central American, Philippine and West Indian business, but would put us into a position to sell American cotton goods in Europe, Africa and Asia, and would unquestionably be the means of our obtaining enormous orders from Russia, which country, as pointed out by Mr. Lamport, has established its credit through implicit performance of all its trade contracts.

With foreign textile markets recaptured and mills running to capacity, we would need our full quota of American-grown cotton, and the necessity for crop restriction would vanish. Without the uneconomic theory of commodity restriction and destruction, we would again take our leadership as the greatest cotton producing nation.

The Government is paying huge sums to prevent this country from producing natural commodities, in face of the sound reasoning that production is wealth. A much smaller sum used in a saner and more constructive way would cure unemployment in cotton mills, restore and increase our foreign textile trade, and eliminate the evil of destroying wealth.

What manner of reasoning is it that puts the price of our American commodity so high that Japan buys cotton from India or Brazil and captures our foreign markets, and even ships its goods into our own country, where plowed-under fields, short hours, high wages and process tax strangle our opportunity for export and paralyze our textile trade?

The cotton market break of March 11, and the nervousness which succeeded it, present a vivid example of the effect of cotton surplus whether held by the Government or by private interests. The used of Government surplus in the form of American-made textiles for foreign consumption would eliminate this uncertainty.

We have heard few valid objections to this proposed tolerance. It has been said that if the plan were adopted for cotton it would have to be applied to other commodities, and our answer is that it should be adopted wherever there exists a surplus owned by the Government.

The point has been urged that cotton, obtained in this manner and at the proposed price and thereafter woven into goods for export, might go abroad and be returned to the United States to demoralize our American markets, but it is our contention that all of these goods could be earmarked and that Government regulations and tariffs could be imposed to prevent any such miscarriage.

Others have said that mills, using this Government cotton, would run to capacity and thereby gain an advantage over American competitors that were not fortunate enough to obtain foreign trade. Our answer is that any plan which is the best for an industry as a whole must be adopted regardless of the effect upon an individual.

Statesmen and politicians have expressed fear that such a policy might bring about a trade war with possible disastrous national eventualities. It seems to us that there is less danger along that line than through building higher tariff walls, and the precedent of government tolerance, bounty or subsidy has often been established in countries of first rank without undue protest from others.

There are only two courses open to us: The first, a policy of producing for home consumption only, with its consequent restrictive and curtailment measures applied both to cotton and its products, or the broader, saner, more constructive plan to eliminate the necessity for these uneconomic schemes through the recapture of our world commodity and textile markets, by the easiest and simplest kind of Government subsidy by means of which the United States helps itself by helping one of the greatest of its industries.

Tragic Future

Awaits any mill that is unable to carry out modernization program

By J. M. Shelton,
Vice-President, Robert & Co., Atlanta

◆ *In an address on "Modernization" before the Textile Operating Executives of Georgia, Mr. Shelton dwelt particularly on the proper relationship between the superintendent and the executive management in the development of a modernization program in a mill. His address follows in part.*

FIVE years ago, a speaker with a modernization subject would have had hard going—for the reason that the topic would have been considered a more or less theoretical one. Today it is different. Whether we approve of all of the improved machinery that has been put on the market in recent years or not, you can't erase, with a wave of the hand, such accomplishments as: one-process picking, one-process drawing, long-draft roving, long-draft spinning, high-speed spooling and warping, high-speed looms, high-intensity lighting, high-duty humidification, and overhead air-cleaning systems.

An Achievement of the Industry

The industry should feel proud of the fact that it has sponsored the achievement of such major improvements in so short a time; however, it must not overlook the tragedy that confronts those that have not been able to stay in the race. On account of the swiftness with which the radical changes in textile machinery have been accepted and adopted, many mill men are not yet aware of the tragic future that awaits any mill that is not able to adopt and carry out some kind of modernization program.

I make this statement advisedly because in the course of my business activities I have had occasion to become familiar with the savings in operating costs that have accrued to mills that put in one-process picking, long-draft spinning, high-speed spooling or winding and warping, high-speed looms and overhead air cleaning systems. During the last two or three years a number of the larger mills have been systematically and without publicity replacing obsolete equipment with modern machinery, until they are now in a competitive position to meet any kind of normal competition.

Due to the key position that the superintendent occupies in the operation of a textile mill, I should say that the burden of sponsoring a modernization program rests upon him. Long before the management spots the reason for high costs, the superintendent sees the effect of obsolescence and inefficient machinery in his daily rounds through the plant.

Whether a superintendent's program or request for modernization goes through or not, he can be sure of his ground if he charts the following course:

1. Be accurately informed as to the exact condition of your equipment and its relative efficiency as compared with new machinery and processes.
2. If the various processes in your mill are not properly arranged—be able to make definite recommendations concerning corrective measures.
3. Before recommending the purchase of new machinery, prove to yourself the operating economies to be effected.

In working out a modernization program, other factors besides the purchase of textile machinery should be carefully considered. Too often a superintendent accepts a poorly arranged and inefficient machinery lay-out, not realizing the penalty he is paying for so doing. The unit of cost in a textile mill is sometimes very small, running into as many as four decimal points, but since the volume going through a mill usually runs into the thousands or millions of pounds, any penalty, however small, can become a major handicap.

Another item which does not require the expenditure of a large sum of money is correct and adequate lighting. In various mills, the management has been able to increase production, reduce seconds and secure lower costs by the installation of a proper lighting system with adequate intensities.

More Emphasis on Employee Qualification

One other phase of a modernization program that I would like to mention briefly is the changes that are taking place in the management of labor and the mill's operating personnel. Minimum wages and maximum hours are here to stay, notwithstanding anyone's personal feelings in the matter. The advent of these two innovations have put an entirely different light on the efficiency of the individual operator in a mill. In the future mills are going to be more selective in choosing their personnel and real emphasis is going to be given to qualifications of the employee. Already some mills are putting in training schools or departments where the inept man or woman is eliminated and the alert are skillfully trained. A little research in such a department is bound to pay handsome dividends. This policy has proven its merit very definitely in a number of mills.

It doesn't take a prophet to forecast that there will always be a huge market for textile goods in this country. Someone must supply that market. Now is the time for manufacturers to decide whether they will supply this demand and at a profit—or whether they will sit by and take what is left after the well-equipped mill has gone home with the bacon.

Supply-Demand Balance...

By F. S. Blanchard and W. O. Jelleme
Pacific Mills, New York

An analysis of the three principal methods of controlling output

◆ *No one question is more vital to textile manufacturers, or more controversial, than that of the limitation of production to adjust supply to demand. In this article, the authors present a dispassionate analysis of the three principal methods of accomplishing this end. They plead no cause—other than the need for thorough research into this difficult problem. Certainly, any thinking manufacturer—no matter on what side of the fence he stands—will recognize that need.*—Editor.

THE experience of the last few years has been an excellent illustration of the effect of various influences on the supply of merchandise and the effect of that supply on price. With a market limited by purchasing power, if there is to be a balance between supply and demand, and if we are to attain the stability of price resulting from such balance, the result must be obtained by adjusting supply more sensitively to the probable demand. This can be done in several ways, of which the following are the principal methods:

1. Limitation of machinery operation (regular hour limitation, and emergency curtailments on a group or industry-wide basis).
2. Regulation of the purchase of new equipment.
3. Control of inventories.
4. Regulation of imports.

It is proposed in this article to analyze briefly the first three of these methods. Each has its advantages and its disadvantages.

Limitation of machine operation has the great advantage of ease of enforcement and is, of course, the method now provided for in the major textile codes. This policy brings with it, however, certain disadvantages. Its effect, of course, depends upon the promptness and sensitiveness with which supply is adjusted to demand. In practice it has often been extremely difficult to obtain prompt action and approval from the NRA for emergency curtailments. Also a proper balance between supply and demand on any given product is difficult to secure when uniform hours are allowed for machinery producing all types of goods in the industry. Yet if varying hours are allowed for different types of product the problems of drawing the line between the different products and the prevention of switching from one product to another become very difficult to deal with.

There is another serious difficulty to be overcome if limitation of machinery hours is to promote efficient operation and achieve economic justice. That difficulty is concerned with the avoidance of a situation wherein the concerns which control their inventories properly are obliged to "pull the chestnuts out of the fire" for those who do not. Let us say that in a certain branch of the industry several companies operate on an inventory turnover standard of four, which means a stock of three months, based on the sales of those companies. Yet the total stocks for this branch of the industry reach six months based on sales. The curtailment necessary for the branch of the industry as a whole may leave the companies with the relatively small stocks unable to fill their orders. Furthermore, the knowledge that an industry-wide curtailment was in prospect may have conceivably encouraged some mills to run full for longer than would otherwise have been the case so that they at least would find themselves with lower costs and larger stocks to benefit by the hoped-for better prices resulting from the curtailment.

In spite of the above serious disadvantages, those who oppose machine-hour limitation must answer the question of what is a better way to accomplish the necessary result—a way that can be understood and enforced. Perhaps some injustices to individual firms or even to whole branches of the industry are necessary in order to avoid a possibly still greater injustice to the stockholders and employees of a whole industry suffering from price demoralization.

Regulation of the purchase of new equipment is another means which has been used to prevent further breakdown of market prices by excessive stocks and production. As an emergency matter it is effective to an extent, but to maintain the status quo of production we need to consider not alone the number of machines in place, but the productive capacity of the machines which are used to replace old machinery.

Another difficulty connected with this method is the possibility of preventing the expansion of the more efficient and aggressive firms at the expense of the less efficient. Yet here also we have to answer the question as to whether such a control is not essential to the maintenance of the industry-wide balance between supply and demand. It will probably mean larger profits in the long run even for the companies which want to increase their equipment for these companies to be denied this privilege for the sake of maintaining that balance which is so essential a factor in the prevention of destructive price cutting.

The method of control by means of inventories instead of machine hours has been undertaken by the Carpet and Rug industry in their Code, which provides as follows (Article VII, Section 2):

"2. Control of Production.—The finished goods inventory of square yards of merchandise wherever located, owned by any member of the industry shall not exceed one third of his sales in square yards of merchandise for the immediately preceding 12 months. A member of the industry whose inventory shall at the end of any month exceed the aforementioned allowed figure shall be allowed a period of 120 days in which to restore the balance between his inventory and sales before curtailing production. Should any person or company enter the industry as a manufacturer or should any existing member of the industry have withdrawn or withdrew his lines from the market for a period of not less than three months the above provisions shall be suspended in their case for the period of 12 months; during this 12 months such person or company may carry an inventory of finished merchandise not to exceed that which is allowed to members of the industry of commensurate capacity under the provisions of this code."

We are informed by members of this industry that

this provision has had a valuable restraining effect on high inventories among members of the industry, for it has established an inventory standard beyond which a company cannot go without the risk of enforced curtailment and heavy losses to itself. This code also has a provision against selling below cost which is not considered a necessary concomitant to the effectiveness of the control provision. Even without below-cost or price-reporting provision it seems probable that the inventory standard established by the code would tend to encourage earlier and thus less drastic action on stock accumulations and thus remove a considerable part of the risk of severe price cutting which large stocks promote.

If a provision against selling below cost is included in codes, the definition of what is to be included in cost is yet to be determined, and the practical difficulties of enforcement would have to be surmounted. The general good of the industry cannot be depended upon as a reason to induce a company to follow any particular course of action; rather, action must be based on what will produce the best profits for each company.

A company which claims that it must be free to cut prices at any time sales decline or inventories increase, must recognize that its price cutting will be met by other companies, and that after such a selling is over it will find that on the average it has sold its goods for less than have its competitors. The only way it can sell proportionately more goods than its competitors is by being the first one to sell at lower prices; this is bound to cause a descending scale of prices from which recovery is difficult.

This descending scale may have carried prices below cost; that depends entirely on how far the leader in such a movement is willing to go in taking losses to obtain cash or to expand its distribution. Experience in the market shows, however, that if the reason for such action has been to expand distribution, as soon as the price inequality is abandoned those companies which have been leading by sound methods of distribution quickly regain their place in the market.

There may be possibilities for the effective establishment of inventory ratio standards, at least for some branches of the textile industry—if not by a permissive code provision, perhaps by the voluntary action of groups, based on the expectation of increased profits resulting from a balanced industry.

Voluntary control by individual companies is of course the principle to be sought. Sound merchandising and good business practice in the long run will of necessity recognize this fundamental. Regulation and limitation by agreement through codes is an expedient. This is emphasized by the uncertainty of the duration of the codes. There is every indication that this principle is slowly coming to be recognized—first by the wholesalers and retailers and more recently to a degree by manufacturers. Unwieldy and obsolete inventories are taking their toll among the distressed companies.

The above analyses of some of the advantages and disadvantages connected with different methods of controlling the supply of textiles will we hope be of some assistance in stimulating interest among the various branches of the textile industry in the need for thorough, unbiased, and practical research into this whole problem. It is to be hoped that a thorough research into all the facts would reconcile opposite viewpoints and establish a policy upon which all, or nearly all, might agree.

Stores Acclaim Silk . . .

5,000 retailers in nation-wide "Review"

HOWEVER shy the silk trade may have been previously about high-powered publicity methods that mood is clearly becoming a thing of the past. Once again last month, nation-wide attention focused on "The Queen of the Fibers," the occasion being the "Silk Review" which was held March 18 to 23, by manufacturers, intermediate divisions and retailers, under auspices of the International Silk Guild. Early reports from both trade and stores indicated the drive had effected a substantial increase in volume.

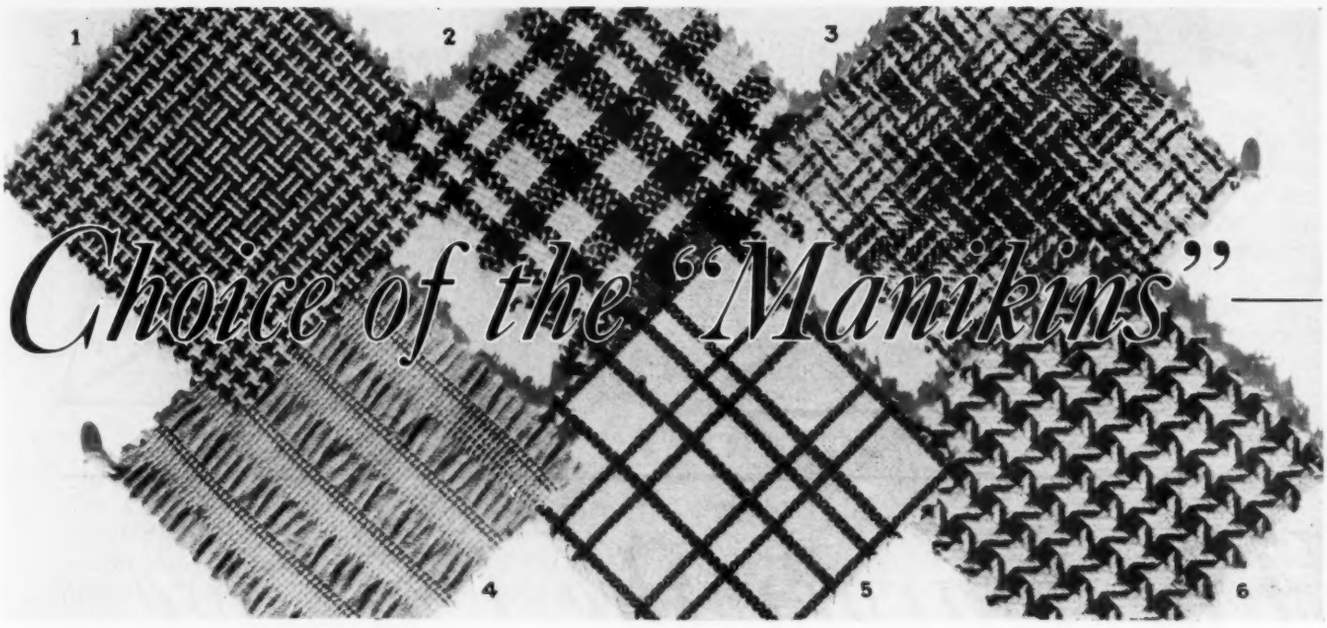
The event brought into play all the heavy artillery of modern sales campaigning, including radio broadcasts, fashion shows, and extensive publicity in the news columns of the nation's newspapers. Fashion editors of newspapers stressed silk merchandise in their departments during the week. One significant feature was the determined effort of stores to identify fiber in merchandise and to educate customers to differentiate between silk and other textiles.

Hundreds of fashion shows were held; some of these, as for example the notable program arranged by Marshall Field, Chicago, were staged several times a day through the week. Outstanding among these style promotions was the silk fashion show held by the Guild in conjunction with a reunion dinner of the Silk Travellers Association, in New York, March 20. At this event nearly half the cast of a current musical comedy, "Anything Goes" served as models in displaying silk styles.

Glimpse of style show at Silk Travellers dinner.

The Silk Review promoted all types of silk merchandise including ready-to-wear, lingerie, hosiery, piece goods, etc. Spring and summer fashions, and bridal apparel were highlighted in many distinctive displays. Large quantities of promotional material had been distributed by the Guild, and this material was used effectively. The "All Pure Silk" tag of the Guild was everywhere in evidence. It appeared chiefly in advertising, display cards, and attached to the merchandise itself.

The scope of the "Silk Review" exceeded that of the Silk Parade of last fall by a considerable margin. The following wholly unofficial estimates offer an idea of the event's significance. The Review was staged in 44 States, in Hawaii and Alaska, and in five foreign countries including South Africa; 5,000 stores in 1,000 communities participated. Silk's message reached 7,000,000 families.



Choice of the "Manikins"

Miss Elizabeth Lewis, designer of fabric No. 5, in her costume as winner of last year's grand prize.

•

Fig. 1. Drawing-in draft and chain plan for suiting No. 1. Two ends per heddle, each mark in draft representing 2 ends—crosses, white; and solid squares, red. Also popular in green and white and in two shades of brown. 20/2 yarn, 50x50 construction, picked as warped.

Fig. 2. Drawing-in draft and chain plan for suiting No. 2. Popular in black and white and in jade and green. 20/2 yarn, 50x50 construction, picked as warped.

Fig. 3. Drawing-in draft and chain plan for suiting No. 3. Popular in green and white, black and white, and red and white. 20/2 yarn, 50x50 construction, picked as warped.

Fig. 4. Drawing-in draft, reed plan, and chain plan for seersucker No. 4, with mock-leno stripe. Mock leno ends from bottom beam 60/2, 3 per dent, skip a dent. Seersucker ends, represented by crosses, 30/2, from top beam. 32 reed. Mock leno pattern, 6 ends pink, 6 yellow, and 6 purple, with light blue or white for seersucker. About 64 picks.

Fig. 5. Drawing-in draft and chain plan for suiting No. 5. 56x56, 30/2 yarn. Filling pattern, 32 white, 4 black, 24 white, 4 black, 16 white, 4 black, 8 white, 4 black.

Fig. 6. Drawing-in draft and chain plan for suiting No. 6. Similar to Figs. 1 and 2. Warped and picked 8 medium blue, 8 white.

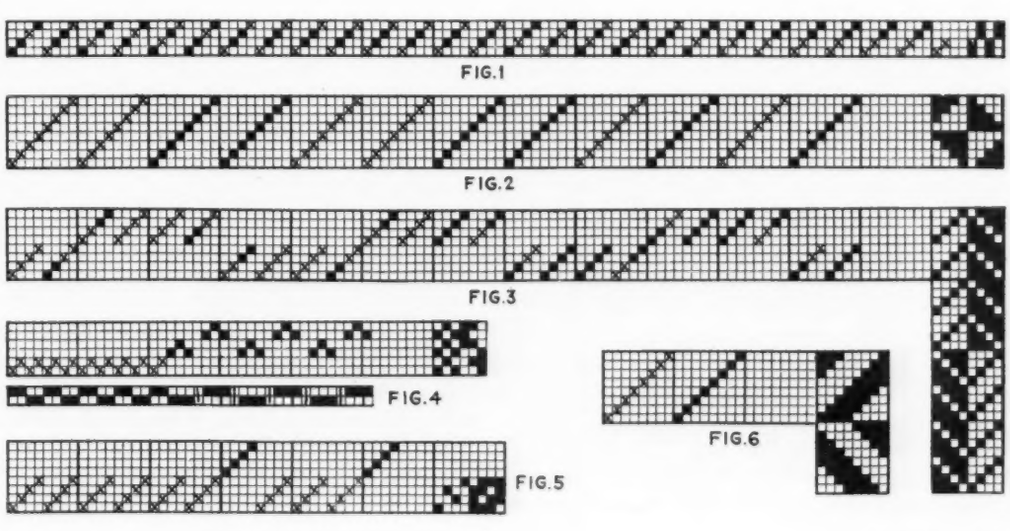
Cottons selected for college style show

By T. R. Hart
North Carolina State College

SINCE 1928 the Textile School of North Carolina State College, in cooperation with the home economics departments of other colleges, has conducted a unique style show. Each spring scores of rayon and cotton fabrics designed and woven by textile students are submitted to the clothing students in the other colleges. Each girl is permitted to select the pattern she desires to use in making a costume to be worn at the style show.

This year 128 young women representing nine colleges located in different sections of North Carolina will participate in the style show which will be held at State College, in Raleigh, on April 25. The home addresses of these girls show that they come from 68 North Carolina towns, nine other States, and two foreign countries. Thus it is felt that they are a good cross-section of young women and that patterns which especially appeal to them would be popular with young women anywhere in this country. Those fabrics illustrated herewith proved the most popular this year. Readers of TEXTILE WORLD are cordially invited to attend the show.

Constructions are detailed at left.



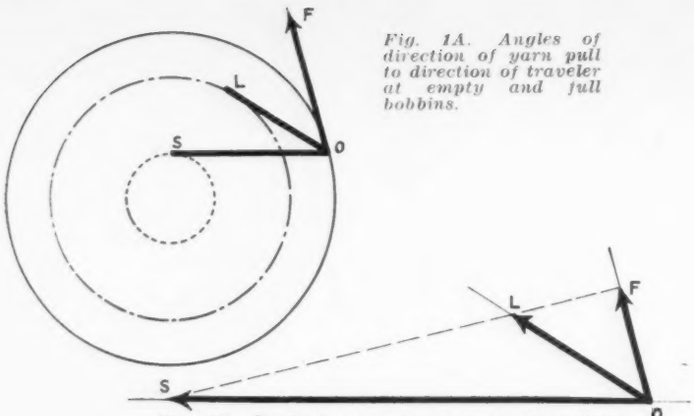


Fig. 1A. Angles of direction of yarn pull to direction of traveler at empty and full bobbins.

Fig. 1B. Variable yarn tensions resulting from relatively constant traveler friction.

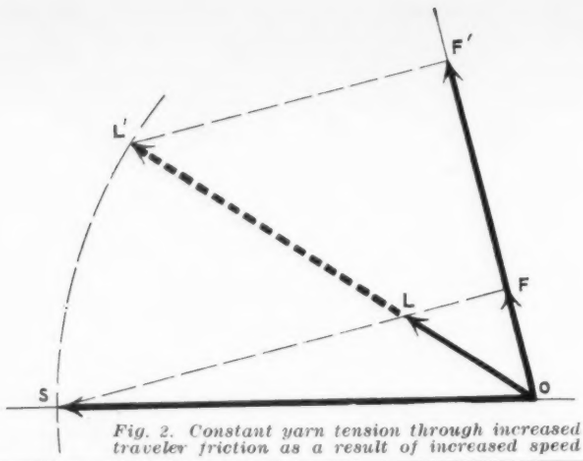


Fig. 2. Constant yarn tension through increased traveler friction as a result of increased speed

The Larger the Package

The more necessary is variable speed for ring spinning and twisting

By W. I. Bendz

TO reduce the cost of production, the use of ring spinning frames has spread widely in the woolen and worsted industries, largely because the size of the package may be increased without many of the limitations inherent in older machines. For instance, one type of modern large-package worsted ring frame spins 6 oz. of yarn per bobbin, as compared to 1 oz. on older machines. This means not only a reduction in the cost per pound of the spinning process, but a consequent saving in the non-productive labor in the operations which follow spinning. So, naturally, the textile industry is showing interest in the so-called "large-package" spinning frames.

There are two complications introduced in the design of a "large package" frame. In order to form a larger package, the rings must be large and the barrel must be long. These two requirements mean that there is a large variance in drag (yarn tension) between the barrel diameter and the full diameter and that the distance from the nip of the rolls to the ring must be increased. The first of these two factors is of greatest importance, because it presents a varying condition; while the latter is a fixed relation that may be compensated for in the design of the spinning frame.

By referring to Fig. 1 *A*, it may be seen that the variance in yarn tension presents a more serious difficulty as the size of the rings is increased. The outside circle represents the ring; and the point *O*, the traveler. The inside (dotted) circle represents the barrel diameter; and the outside (dash-line) circle, the full package diameter. The force necessary to move the traveler because of its friction with the ring is represented by the line *OF*, which is of course tangent with the ring circle. The angles that the yarn makes between the traveler and barrel and between the traveler and full package are represented by the lines *FOS* and *FOL* respectively. For the purpose of comparison, these angles and lines are transposed to the triangular diagram in Fig. 1 *B*. At any given speed the traveler friction is a constant and represented by the line *OF*. In order to obtain this pull on the traveler, the resultant yarn tension at the large diameter is represented by the vector line *OL*. But at the barrel diameter the yarn tension must increase to the amount represented by the vector *OS* in order to overcome the traveler friction. Consequently, it can be seen that if a large-package ring spinning frame is run at a constant speed, the yarn tension will vary over wide limits. The maximum speed consistent with normal breaks is necessarily limited by the end breakage that will occur at the small diameter (barrel diameter).

To compensate for the change in tension, the speed may be varied as the yarn winds between the large and the small diameters. Referring to Fig. 2, assume that yarn tension *OS* is permissible without causing excessive breaks. At the barrel diameter this results in a traveler pull of *OF*, as previously explained. At the large diameter, the same yarn tension is represented by the line *OL'* (*OL'* and *OS* are the same length). In this case the tension *OL'* results in a traveler pull of *OF'*. It may be seen that *OF'* is larger than *OF*, which is interpreted to mean that at the large diameter the speed may be increased to result in a traveler friction of the value *OF'* without increasing the actual yarn tension.

From the foregoing discussion it is apparent that by driving the spinning frame at a varying speed always in proportion to the diameter of that part of the package on which the yarn is winding, the yarn tension may be equalized. The speed variance should be altered according to the yarn being spun, since different counts and qualities of yarn naturally have different breaking strengths.

The adjustable-speed direct-current motor was used in some of the earliest experiments on variable-speed spinning, doubtlessly because it was easily attached to a spinning frame and presented little difficulty in its application. However, it possessed the disadvantage of requiring a source of direct current, seldom available in a spinning mill.

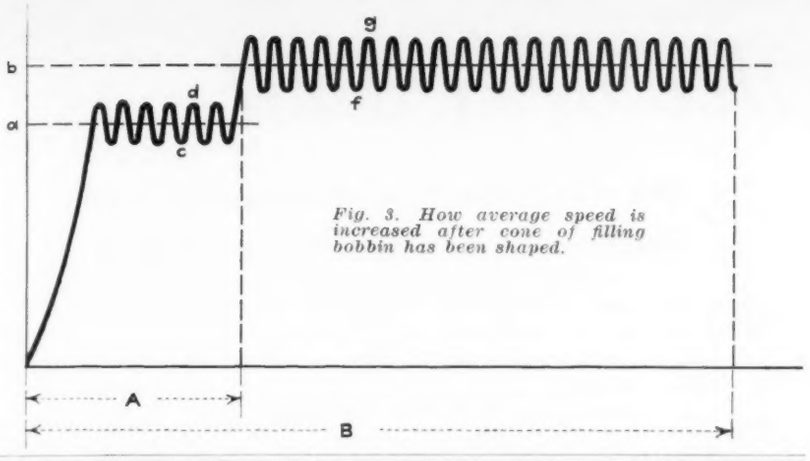


Fig. 3. How average speed is increased after cone of filling bobbin has been shaped.

MECHANICALLY variable-speed drives are being applied to cotton ring spinning and twisting frames, and electrically variable-speed drives are being applied to worsted and woolen ring frames. Mr. Bendz, as a member of the industrial division of Westinghouse Electric & Manufacturing Co., has been in closer touch with the latter; but his interesting explanation of the need for variable-speed drives, made with the aid of a vector diagram, is applicable to either type.

The adjustable-speed alternating-current motor has also been tried; but its size and expense and the difficulty of mechanically connecting the speed-controlling mechanism to a spinning frame are disadvantages that have kept it from advancing beyond the experimental stage.

The alternating-current wound-rotor motor, which is a standard type of motor that has been used in industrial plants for a long time, has been selected for recent applications of variable speed to spinning. It is rugged, reliable, and but little more expensive than the common type of squirrel-cage constant-speed motor. It is compact and easily built into a spinning frame without requiring any additional floor space for mounting. In fact, the only change from the usual squirrel-cage type of motor is a few inches in its length.

On all filling-wind ring-spinning frames there are two factors involved in the speed control. First in importance is the constantly varying speed timed with each cycle of the builder cam. Second is a reduction in average speed at the start of a new doff while the bottom of the barrel is being filled in.

These functions are best understood by referring to Fig. 3. The vertical axis represents spindle speed and the horizontal axis represents time, or the progress of the package being spun. Distance *A* indicates the portion required to form the package on an empty barrel, while *B* represents a complete doff. Of course, the ratio of *A* to *B* is greatly exaggerated for the purpose of discussion. The dotted line *a* indicates the average spindle speed during the interval of forming the package, while line *b* indicates the average speed during the remainder of the doff.

The control apparatus used to obtain the variance between points *c-d* and *f-g* is a special type of alternating-current rheostat used with a wound-rotor motor. To secure the reduced speed during the formation of the package, represented by portion *A* of the curve in Fig. 3, the magnetic control incorporates an auxiliary resistor used in addition to the spin rheostat mentioned previously. At the end of the period *A*, or when the package is fully shaped, a limit switch, operated by the builder mechanism of the spinning frame, energizes a magnetic contactor and short-circuits the auxiliary resistor. The motor then speeds up to the variance designated *f-g* in Fig. 3 and operates in this manner throughout the remainder of the doff. Practical operating experience has proved that by favoring the spin during this initial period of a doff the number of breaks are reduced sufficiently to make this function a valuable part of a variable speed drive.

In addition to these operating functions the control apparatus is designed to start the motor always at a reduced torque. By limiting the starting torque, the "shock" to the spinning frame when starting is eliminated, and this prevents much of the end breakage which usually occurs. A timing relay automatically accelerates the motor to the proper speed, the rheostat having full control of the motor from that point on.

The most important requirement of a variable-speed drive is that the speed always is exactly timed with the builder mechanism. A small error in this respect may entirely counteract all of the gain and may even result in a poorer spin than if the drive were run at a constant speed. For this reason a direct drive between the builder mechanism and the speed-controlling rheostat has a decided advantage.

Variable-speed drive has been in use on the Bradford worsted spinning frames for several years. It is also in use on wool spinning frames, French spinning frames, and twisting frames. Practical operating experience has shown that the "large package" spinning frames, now becoming popular, usually require a variable-speed drive.

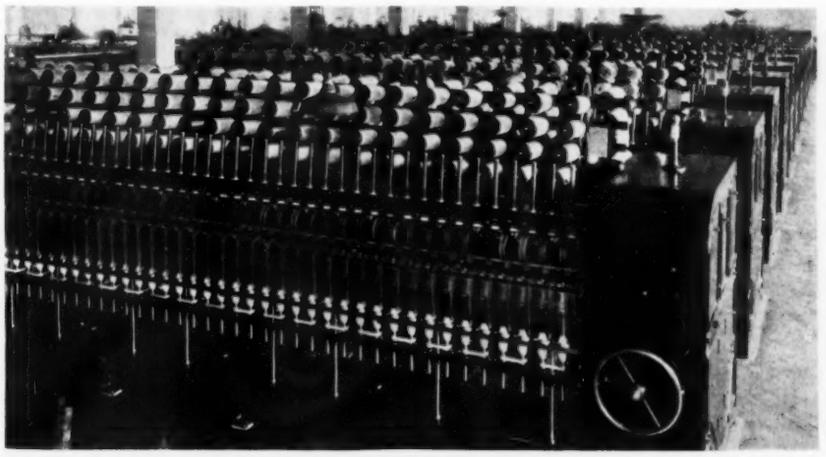


Fig. 4. Group of worsted ring spinning frames equipped for variable-speed drive

Influence of Twist

On diameter, shortening, and dullness of silk hosiery yarn

By Warren P. Seem and Thurman Andrew

IN mill practice the direction of twist is determined in the following manner: Take one end of a thread in the left hand and the other in the right hand and hold it in a horizontal position; the thread opening when twisting with the right hand towards the body is S-twist and that opening when twisting with the right hand away from the body is Z-twist. "S" and "Z," the new terms proposed by E. D. Fowle for designating the direction of twist, are defined by committee D-13 as follows: "A yarn or cord has S-twist if, when held in a vertical position, the spirals conform in slope to the central portion of the letter 'S,' and Z-twist if the spirals conform in slope to the central portion of the letter 'Z.'"

A spindle running clockwise is making Z-twist, and one which is running anti-clockwise is making S-twist. In the case of a bobbin with a taper hole, when the small hole is on top, thread paying off clockwise is S-twist, and thread paying off anti-clockwise is Z-twist. When the bobbin has a straight hole, determine which head represents the top of bobbin when the bobbin is on the spindle and then apply above rule. In doubling with taper-hole bobbins, for Z-twist, place the small hole toward the right; for S-twist, place the small hole towards the left on spindle.

Silk yarns twisted in but one direction either "S" or "Z" are called tram, radium, or crepe, depending on the number of turns. Silk yarns twisted on single or multiple thread and then plied into a cable of two or more cords, in an opposite direction, are called organzine, grenadine, semi-balanced, balanced, and compensene "S," depending on the thread and turn. See Fig. 1.

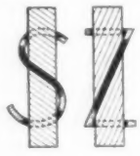


Fig. 2. Twist designation

The shortening of a yarn made with both Z- and S-twist is equivalent to the second S-twist minus the shortening caused by the first Z-twist. When the twist on the single and multiple are in the same direction, the effect on the thread is the sum due to both twists. For example, if in 3-thread, 28/32, grenadine each single thread is thrown with 28 Z-turns and the three-ply is given 32 S-turns, the shortening due to the 28 Z-turns equals 1.05% and the shortening due to the 32 S-turns equals 4.15%. The shortening of the combined thread equals 4.15—1.05, or 3.10%.

Hundreds of micro-micrometer readings on the diameter of yarns of various threads and twist were made for the purpose of developing a formula to compute a relative table of diameters on threads and twists used in throwing hosiery yarn. It was found that the shrinkage in diameter increases as the number of threads and twists increases. An empirical formula, based upon micro-micrometer readings strikes a fair average. The formula is: $D = [(112 - n\sqrt{N})^2 + (13{,}000 \times \sqrt[7]{N^2})] \div (448 \div \sqrt{N})$, in which D = diameter of twisted threads; N = number of threads; and n = number of turns per inch.

Example: Find the diameter of 9 threads twisted 20 turns per inch.

$D = [(112 - 20\sqrt{9})^2 + (13{,}000 \times \sqrt[7]{9^2})] \div (448 \div \sqrt{9})$
$D = [(112 - 60)^2 + (13{,}000 \times 1.872)] \div 149$
$D = (52^2 + 24{,}336) \div 149$
$D = (2704 + 24{,}336) \div 149$
$D = 27{,}040 \div 149$
$D = 182$

Table I gives diameters based on this formula.

If threads of different diameters are used, D will be

TABLE I. Diameters (D) of twisted threads—N = number of threads; n = number of turns per inch.

n	N 2	3	4	5	6	7	8	9	10	11	12
5	84.5	110.5	132.5	151.0	173.0	192.0	210.0	226.0	241.5	259.0	274.0
10	80.5	103.5	124.0	140.0	160.5	177.0	193.0	208.5	219.0	237.0	251.0
15	76.0	97.5	116.5	131.0	150.0	163.0	179.0	194.0	206.0	220.0	233.0
20	72.0	92.0	109.5	123.0	140.5	154.5	168.0	182.0	193.5	207.0	219.0
25	68.5	87.0	103.5	116.0	132.5	146.5	159.0	172.5	184.0	198.0	209.0
30	65.5	83.0	98.5	110.5	126.5	140.5	153.5	167.0	178.0	192.0	205.0
35	62.0	79.5	94.0	106.5	122.0	136.5	150.0	163.5	176.0	191.0	205.0
40	59.5	76.0	90.5	103.0	120.0	134.0	148.5	164.0	178.0		
45	57.5	73.5	88.5	101.0	118.5	134.0	150.0				
50	55.5	71.5	87.0	100.5	119.0						
55	53.5	70.0	86.5	101.0							
60	52.5	69.5	86.5								
65	51.5	69.0									
70	50.5	69.5									
75	50.0										
80	50.0										

TABLE III. Percentage of shortening of tram—N = number of threads; n = number of turns per inch.

n	N 1	2	3	4	5	6	7	8	9	10	11
5	0.06%	0.10%	0.16%	0.20%	0.26%	0.31%	0.37%	0.42%	0.48%	0.55%	0.64%
10	0.19	0.39	0.58	0.69	0.96	1.18	1.35	1.52	1.71	1.86	2.24
15	0.38	0.79	1.18	1.57	1.95	2.34	2.73	3.10	3.60	3.82	4.55
20	0.65	1.33	1.96	2.59	3.21	3.77	4.40				
25	0.99	1.89	2.74	3.66							
30	1.30	2.54	3.75	4.88							
35	1.60	3.15	4.74	6.11							
40	2.00	3.92	5.72								
45	2.40	4.63									
50	2.70	5.44									

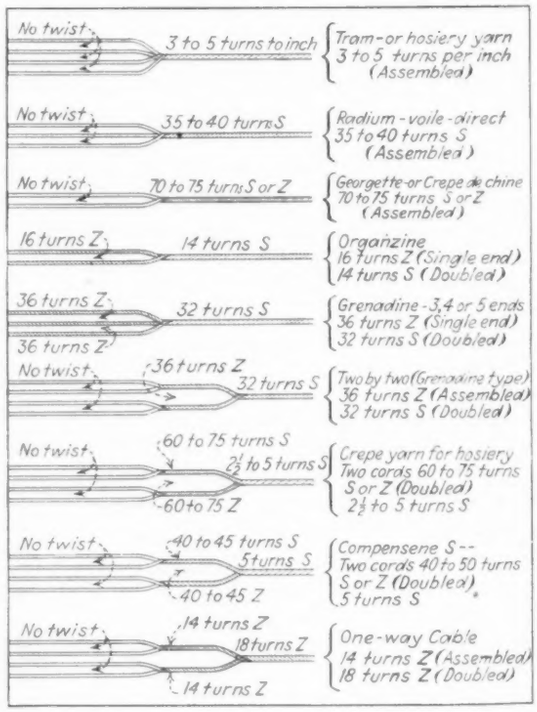


Fig. 1. Diagrammatic representation of various types of silk yarn based on drawings prepared by Read & Lovatt Mfg. Co.

the stated value multiplied by the ratio of the new diameter to the diameter of thread used above. The 112 above is really k/d, where k is a constant and d is the diameter of a single thread. Also the number 448 is $4k/d$.

Consider a cylindrical bundle of elastic threads, all alike, $\frac{1}{8}$ in. in diameter and 1 in. long. If this is given one turn, the outer elastics will be stretched, and they will tend to squeeze the inner threads closer together and reduce the diameter. Now consider a similar bundle $\frac{1}{4}$ in. in diameter. Since it is twice as thick, it should be twice as long to give the same relative strain for one turn and to reduce the diameter in the same proportion. In other words, when the diameter is doubled, it will be reduced the same percentage with half the turns per inch. However, when the diameter is doubled, the cross section is multiplied by four and the number of threads is multiplied by four. Again, when four times as many threads are used, the diameter is multiplied by three, and, in general, when the number of threads is increased by a multiple, the diameter will be increased by the square root of the multiple. This accounts for the square root of N in the denominator of the formula. The extent to which a diameter will decrease depends on the elasticity and the tension, but for a substance like silk there is a limit to the tension which can be applied without causing it to break. If the turns are increased without increasing the tension, the diameter will stop decreasing at some critical point. This point will depend on an elastic constant and on the diameter, which, if composed of several threads, may be indicated by $d\sqrt{N}$, where d is the diameter of one thread and N is the number of threads. From experiments it appears that the critical point for 5 threads is close to 50 turns; therefore that value was chosen. If $k/(d\sqrt{N}) = 50$, when $N = 5$, $k/d = 112$. Then $112/\sqrt{5} = 50$, and in general $112/\sqrt{N} = n$ where n is any number of turns. If this is multiplied by $\sqrt{N}$, it gives $112 = n\sqrt{N}$. For any given value of N, the value of $112 - n\sqrt{N} = 0$ when $n\sqrt{N} = 112$. If n would increase sufficiently, this value would become negative. To avoid this, the quantity was squared. The 13,000 (N) was added to account for the rest of the unknowns and adjusted to micro-micrometer readings.

In measuring raw silk with a micro-micrometer the diameters measured will usually be above or below the average, due to general unevenness. In addition, as the thread varies from a round to more or less of a flat shape, it is difficult to compute tables from micro-micrometer readings, and closer relations are found by using the readings to determine the law governing the same, and from that to compute a table mathematically.

Table II gives values of expressions involving N.

Table III gives the percentage of shortening for 14.17-denier silk threads having a diameter of 21.84 micro inches or 0.002184 in. The formula for shortening is $L = \sqrt{P^2 + [50\,N \div (n + 50) \times (\pi\,d)^2]}$, in which L = length of thread before twisting; P = length of thread having one turn after twisting; d = diameter of single thread; N = number of threads in multiple; n = number of turns to the inch: $\pi = 3.1416$. The percentage of shortening $= [(L - P) \div L] \times 100$.

Example: Find the shortening of a 10-thread silk with 10 turns per inch.

$$L = \sqrt{(10{,}000 \div 10)^2 + (50 \times 10) \div (10 + 50) \times 68.613^2}$$
$$L = \sqrt{1{,}000{,}000 + (50 \div 6) \times 4708}$$
$$L = \sqrt{1{,}000{,}000 + 39{,}283}$$
$$L = \sqrt{1{,}039{,}283}$$
$$L = 1019$$

$$\text{Percentage shortening} = [(L - P) \div L] \times 100 = \frac{1900}{1019} = 1.86$$

TABLE II. Values of expressions involving N—1 micron = 0.001 millimeter or 0.0000394 in. 25,450 microns = 1 in.

N	$\sqrt{N}$	$448/\sqrt{N}$	$\sqrt[3]{N^2}$	$13000 \times \sqrt[3]{N^2}$
2	1.414	317	1.219	15850
3	1.732	258	1.369	17800
4	2.000	224	1.486	19340
5	2.236	202	1.584	20300
6	2.449	183	1.668	21700
7	2.646	169	1.744	22650
8	2.828	158	1.811	23500
9	3.000	149	1.872	24350
10	3.162	142	1.931	25050
11	3.317	135	1.982	25800
12	3.464	129	2.033	26400

1 micron = 0.001 millimeter or 0.0000394 in. 25,450 microns = 1 in.

TABLE IV. Diameter, shortening, and dullness of silk yarns organzine yarn

	Diameter	*Shortening*	*Dullness*
Organzine Yarn			
2 Thread 16/14 Turns Single 16-Z-Twist 2 ply 14-S-Twist	76 Microns	0.28%	11%
3 Thread 14/12 Turns Single 14-Z-Twist 3 ply 12-S-Twist	97 Microns	0.48%	12%
4 Thread 12/10 Turns Single 12-Z-Twist 4 ply 10-S-Twist	122 Microns	0.32%	13%
Grenadine Yarn			
2 Thread 32/36 Turns Single 32-Z-Twist 2 ply 36-S-Twist	63 Microns	1.88%	23%
3 Thread 32/36 Turns Single 32-Z-Twist 3 ply 36-S-Twist	78 Microns	3.52%	28%
4 Thread 32/36 Turns Single 32-Z-Twist 4 ply 36-S-Twist	93 Microns	4.93%	34%
2 x 2 Grenadine Yarn			
4 2 x 2 32/36 Turns 2 ply 32-Z-Twist 4 ply 36-S-Twist	93 Microns	3.57%	35%
One-Way Cable Yarn			
2 Thread 15/30 Turns Single 15-Z-Twist 2 ply 30-Z-Twist	66 Microns	2.92%	26%
3 Thread 15/20 Turns Single 15-Z-Twist 3 ply 20-Z-Twist	92 Microns	2.34%	28%
4 Thread 14/18 Turns 2 ply 14-Z-Twist 4 ply 18-Z-Twist	109 Microns	2.89%	35%
Semi-Balanced Yarn			
2 Thread 10/15 Turns Single 10-Z-Twist 2 ply 15-S-Twist	76 Microns	0.60%	12%
2 Thread 18/36 Turns Single 18-Z-Twist 2 ply 36-S-Twist	63 Microns	2.76%	23%
2 Thread 20/40 Turns Single 20-Z-Twist 2 ply 40-S-Twist	60 Microns	3.27%	24%
2 Thread 25/50 Turns Single 25-Z-Twist 2 ply 50-S-Twist	56 Microns	4.45%	28%
Hosiery Crepe Yarn			
2 Thread 55/65/5 Turns Single 55-Z-Twist Single 65-S-Twist 2 ply 5-Z-Twist	53 Microns	6.70%	34%
4 Thread 55/65/5 Turns 2 ply 55-Z-Twist 2 ply 65-S-Twist 4 ply 5-Z-Twist	87 Microns	14.32%	72%

Table IV gives the diameter, shortening, and dullness caused by twisting of various types of silk yarn. The subject of dullness will be discussed in a subsequent article.

Revamping of equipment is important phase of program for increasing

Bleach-House Efficiency

By Miles Sampson

IN THE March issue of TEXTILE WORLD the writer discussed the way in which bleach-house efficiency can be improved by modernizing the layout of equipment so as to insure straight-line flow of goods through the department. It is not enough, however, merely to rearrange the equipment if the greatest possible benefits are to be obtained from the modernization program. The machines themselves must be brought up-to-date by the installation of new equipment or by the improvement and refinement of existing machines. Certain phases of this part of the program were touched upon in the preceding article, where installation of automatic kier pilers, continuous oxidizing machines, etc., was recommended. We shall now consider some of the improvements in present equipment which can be effected under the supervision of the engineering department of the mill.

Of the various types of machines used in the bleach house, the washer is, perhaps, the most susceptible to improvement. Little attention has been given, for example, to the design of washer frames from the viewpoint of desirability and ease of housing. Fig. 1 indicates how the conventional type of washer frame can be adapted, above the floor, to the requirements of water retention, visibility of roll nip, and accessibility. The job is only fairly satisfactory, as this type of frame, although commonly employed, was never designed to make housing easier. Note that the machine is set level with the floor on a concrete foundation. If the basement is high and adequate height from the pit roll to the rubber rolls is available, the washer could be set still lower to advantage. Water can be conserved by means of splashboards, directing it back into the tub. Large disk "flingers" fastened to the lower roll just inside the housing will aid in retaining the water and prevent it from following along the shaft to the bearings and the floor. These are not shown in the drawing. The zone of visibility *AB* from which the actual roll nip can be seen is not very large. The operative will usually get his knowledge of a break from the action of the entering and leaving cloth strands, both plainly visible.

Accessibility is extremely important. For ordinary cloth breaks, it should be practically instantaneous and without the use of any tools. This is made possible by the arrangement shown in the drawing, where cover *D* is hinged at *E*, and splashboard *AC* is hinged at *A*. For roll removal or other major repair, tools can be allowed, but time is money here, with the entire range held up while the break is repaired. In the design shown, splashboard *CF* can be lifted out, with *CA* attached, to expose the whole front. The top roll is removable after the housing top is taken off, this being held in place only by bolts through the ends of the main supporting stick *F*. An I-beam fastened to the ceiling at the center of the roll, taking a trolley and chain fall when required, will expedite matters, and will probably pay for itself in the initial erection.

In the case of reels, the maximum possible contact of cloth with the reel is desirable. Yet this seemingly obvious fact is often overlooked. Application of a binder roll, as at *A* in Fig. 2, will make the reel pull much better than if the pull is direct as on line *BC*. The added pulling power more than makes up for the friction added by the extra bearings, particularly if these are of the anti-friction type.

Reel speed is, however, the most important factor in reel pull. Draft is commonly calculated by the following formula: Draft = (Peripheral speed of reel — Cloth speed) ÷ Cloth speed. However, draft based on this formula usually will be too great, as indicated by the cloth throwing out beyond the edge of the reel and not dropping in a plumb line. Unthinking attempts have been made to increase pull simply by increasing reel speed or diameter, but a draft of 5 to 10% will be found correct if other conditions are as enumerated above. Rubber-covered pulleys or drums used to pull cloth will be found to work better with much less draft, say 1 to 3%, and the wear on the rubber covering is greatly reduced. Slatted reels will pile more evenly into a squeezer tub or slack box if some of the slats are 1 or 2 in. higher than others, as shown at *D*, *E*, *F*, and *G* in Fig. 2. Such reels impart an oscillating motion to the cloth and lay it somewhat more evenly.

Rollers employed for conveying cloth when pot eyes are not suitable may be of whitewood or maple for an inexpensive job, but 3- or 4-in. copper tubing makes a better and longer-lived roll. In any case, definite roll lengths should be adopted (such as 8, 12, 18, 24, and 48 in.) and the other dimensions standardized. At a cloth speed of 275 yd. per minute a 4-in. roll is turning 790 r.p.m.; a 3-in. roll, 1,050 r.p.m. Loads at some of the turning points are considerable.

It will be found practically impossible to keep sleeve bearings properly lubricated, especially where the shafts are vertical, and where oil must not be allowed to drp. Wear is rapid, and this sort of bearing will require constant repair. Bearings for such rolls should therefore be anti-friction, one of the commercial unground race types, or better. Sizes from $\frac{3}{4}$ to $1\frac{1}{4}$ in. will cover all ordinary conditions. The bearings should be mounted in light, solid pillow blocks, standardized in dimensions.

When we come to the frames supporting the bearings, we find standardization more difficult. Requirements do not repeat themselves with any degree of regularity. Different angles of cloth at entering and leaving points call for different roll arrangements if the cloth is to run

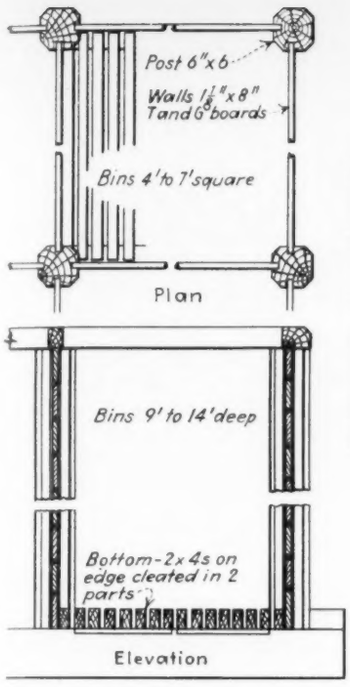


Fig. 3. Economical wooden white-bin construction.

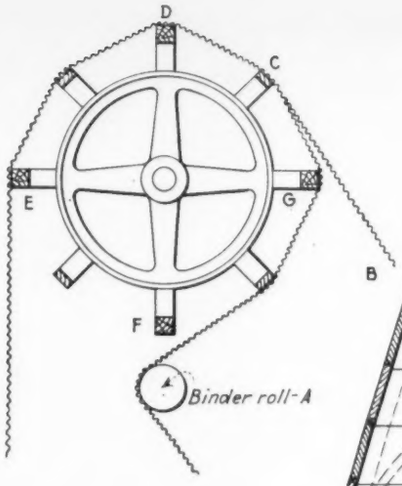


Fig. 2. Application of binder roll and high slats to cloth reel

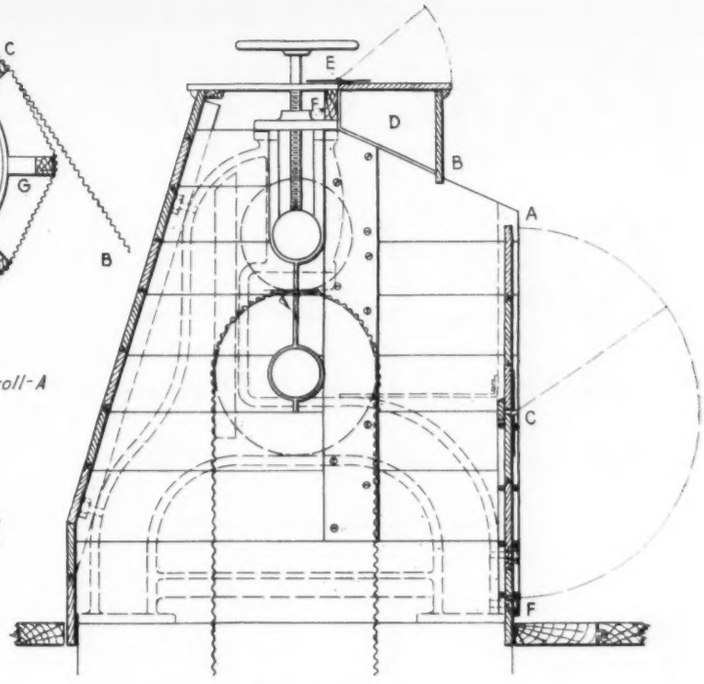


Fig. 1. Water-tight housing for washer with conventional frame —section through hubs.

freely under all conditions. Present practice is to build frames to fit particular places and, consequently, they are all different. The result is usually a total loss of the frame when and if it has to be moved. It is questionable whether this is an economical policy. A standard frame could be built to carry a single roll for a straight-through pull, or two rolls in any one of several combinations where turns are required. Such a standard frame could be used at the rope soapers and developers, as well as in the bleach house, using one frame for each strand of cloth to be carried. The writer has never seen this idea carried out except on a small scale, but in that case it seemed to be feasible and to have the advantages of quick replacement and repair, 100% movability, and much improved appearance. It should be a paying investment over a period of years.

Design and construction of white bins are neglected in many plants. Yet bin material is important. A high grade of all-heart cypress, suitable to resist decay, is good but expensive. There is no logic in making the wall surfaces of, say, corrugated asbestos board, which probably will last for decades, if the supports are made of short-lived material. Low grades of yellow pine, treated to resist decay, will make a satisfactory job at a moderate price. Choose a treatment guaranteed not to stain the cloth, as staining must be avoided at all costs. Zinc meta-arsenite is one of these. In the construction shown in Fig. 3 everything can be mill-cut to dimension before treatment by a little careful planning. The treatment can then be 100% effective, and erection is exceedingly rapid. There are very few nails, and none exposed to cause trouble by stains or tears. Note that the bottom is, in effect, a grating for free drainage of the cloth moisture which accumulates overnight in the bottom layers.

In recent years, kiers have been improved to give better circulation and to permit savings in steam consumption. The pump-and-heater type, for example, enables attractive savings, frequently making it possible to get away from the two-boil method of bleaching. If the plant does not already have pump-and-heater kiers and does not find it feasible to install new kiers, it can obtain small, inexpensive heaters which can be added to the present equipment.

The work required of the heater is a definite thing, easily calculated when the bleacher's requirements are reduced to figures. Assume, for example, that the load of cloth, the liquid, and the kier itself must be raised from the initial temperature to boiling in 1½ hours and reach its maximum temperature of 240 to 250° F. in 1¼ hours more; an ample supply of steam is available; and liquor circulation is to be at the rate of 100 gal. per minute. With these data, any heater manufacturer of experience can furnish a heater which will do the work, and guarantee its performance.

The liquor circulation is limited by the amount which will flow down through the cloth to the well below the grate, and by the amount which will tend to channel through the cloth. Even if the pump is rated higher, the first limit will not be exceeded. The pump pressure must also be specified, to cover the liquid head on the pump, the pressure loss through the heater and piping, and the exit pressure wanted at the spray head. The newest type of centrifugal pump, mounted on the motor shaft, will be found to be inexpensive but satisfactory for the job. The heater condensate can be returned to the boilers by the usual means, being uncontaminated with caustic. Several thousands of pounds of hot water per kier can be recovered in this way, with a consequent reduction of steam costs.

As a final suggestion on bleach-house modernization, the writer wishes to propose for consideration the possibility of replacing the usual friction-block, hand-operated clutches with electric clutches for use with group drives. Electric clutches should be satisfactory from the operating point of view and would have the advantage of still further concentrating controls, and thus would allow all starting and stopping of machines in both the kier-filling and the kier-emptying or bleaching range described in the previous article to be done by one man at a central point.

Pebble and Take-Up

Varied by formulas used for soaking rayon crepe

By C. W. Bendigo
Glen Raven Silk Mills, Glen Raven, N. C.

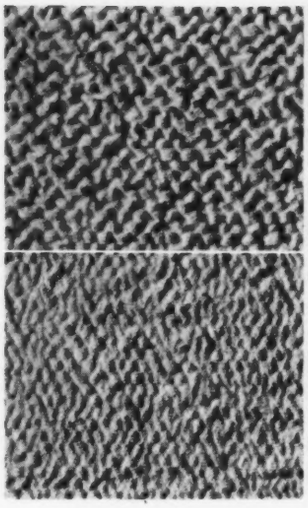


Fig. 1

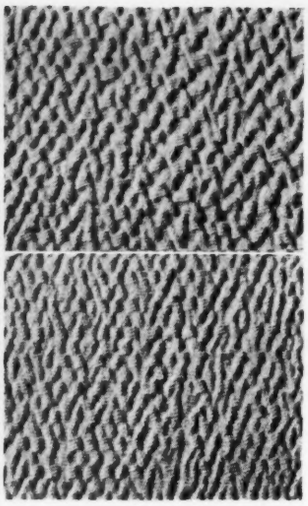


Fig. 2

TO a great degree the responsibility for the final appearance of rayon crepe fabrics rests with the throwster. This is due largely to the fact that the throwster, by using different soaking formulas, can at will vary the character of the pebble and the take-up of the cloth.

Thus, the variation in pebble obtained on a fabric made with a 200-denier viscose filling and 100-denier acetate warp merely by changing the soaking formula is shown in Fig. 1.

It has long been considered that the more turns put into a crepe yarn, up to a certain limit for each denier, the greater will be the crepe effect. This is not necessarily true, for it is entirely within the throwster's power to produce various crepe effects, even though the yarn used and the number of turns remain the same. For example, it is possible to make a 150-denier yarn crepe more than a 200-denier and to make a 50-turn yarn crepe more than a 60-turn.

It is possible also for the throwster to soak one piece of a fabric so that it will have as much as 1½ in. greater take-up (contraction in width during the creping operation in the finishing plant) and a considerably less prominent pebble than is obtained in another piece of the same fabric soaked in a different way. Again, with one soaking formula, a throwster can obtain a fabric which will have a fine pebble with many hills and valleys per inch, with another formula he can change the pebble to one with wide waves and fewer valleys and hills per inch. The two pieces of cloth shown in Fig. 2 were finished commercially. Other than in the soaking, both had identical treatment, but differ widely in finished appearance.

When gelatin and oil are used in soaking viscose yarn, the general rule is to decrease the gelatin and increase the oil for greater crepe. The opposite of this rule also holds true. However, the gelatin has a greater influence than the oil on the final result. That is, a 25% increase in the amount of gelatin will have a greater tendency to make a finer pebble than will a 25% reduction in the amount of oil. Different brands or qualities of soaking materials will give different effects. For instance, gelatin of high purity and with a high viscosity and high jelly strength will give a finer pebble in the finished cloth than will be obtained with an equal amount of an adulterated gelatin which has a low viscosity and low jelly strength.

Substitution of various gums for gelatin in soaking has been found to give heavy pebbles and great take-ups, but some finishers have objected to their use, asserting that finished fabrics from them tend to creep in and are otherwise objectionable. They state also that gums are more prone to go into the yarn than to form a protective sericin-like coating around it.

The type of oil used is another influencing factor. One manufacturer of textile oils found that a reduction in the coconut oil content of a coconut and olive-oil compound, resulted in a greater pebble. Experiments by the writer show that a highly sulphonated olive oil or castor oil used with a small amount of gelatin produces the heaviest crepes.

It should be noted that formulas and products which may be satisfactory in one mill may not be equally so in another. This undoubtedly is due largely to differences in the water available in different plants. It is necessary, therefore, for each mill to develop formulas that will give the desired results under the particular conditions encountered.

The amount of yarn soaked in a bath of a given volume has a bearing on the crepe effect produced. Crowding of the goods in the bath should be avoided; otherwise some parts of the yarn will have more opportunity to take up the solution than others, thus causing unevenness in the fabric. Extracting, a most important and often neglected factor, was considered in detail in the March issue of TEXTILE WORLD and need not be discussed here. Uniformly heavy tensions in winding and spinning, so long as they do not exceed the elastic limits of the yarn, increase the potential take-up and cause a slightly finer pebble.

Each of the various throwing operations mentioned has its influence on the final crepe. With the exception of the soaking formula, however, none will materially affect the character of the pebble, but will tend more to vary the amount of take-up. That is, if a particular formula gives a wavy, rolling pebble in a 4x4 weave, it will give the same type of pebble to a more or less degree, despite any manipulations other than of formula. Finally it should be emphasized that this discussion has referred specifically to viscose rayon. Cuprammonium yarn, which is making a bid in the crepe field, in many respects is entirely different in its behavior, and its treatment will be considered in a subsequent article.

TEXTILE WORLD Guide to Thirty-first Annual

Knitting Exhibition

Philadelphia

April 22 to 26, 1935

KNIT goods manufacturers who are interested equally in hosiery and underwear developments will find the program for "Knit Goods Week" April 22 to 26 in Philadelphia especially to their liking this year. The tendency toward cooperation between these two branches becomes more pronounced annually. Last year the Underwear Institute joined forces with the National Association of Hosiery Manufacturers in promotion of the hosiery association's classic event, the Knitting Arts Exhibition. This year, however, the Underwear Institute goes a step further; the annual convention of that organization will be held in Philadelphia as part of the "Knit Goods Week" program thus enabling underwear men to attend the Knitting Arts Exhibition and their trade association conclave on one trip.

The 31st annual Knitting Arts Exhibition will be held at the Commercial Museum as usual, opening April 22, and concluding April 26. Other major events on the week's calendar follow: Monday—an industry-wide conference called by the Hosiery Code Authority; Tuesday—hosiery standards meeting; Wednesday—annual convention of the National Association of Hosiery Manufacturers; also a joint meeting of the executive committees of the Underwear Institute and the Underwear Code Authority; Thursday—annual convention of the Underwear Institute, the chief speakers being the Institute officers. All these events will be held at the Commercial Museum, with the exception of the joint meeting of the Underwear Institute and the Underwear Code Authority on Wednesday at the Benjamin Franklin Hotel.

Two phases highlight "Knit Goods Week" this year: First, the unusual inclusiveness and significance of the exposition itself (it promises to be the most important since 1929); and second, the action to be taken by the hosiery and underwear divisions on NRA problems.

A description of the exhibits follows:

AAA Silk Laboratory, New York. Booth 51a. Textile testing.

Aberfoyle Mfg. Co., Philadelphia. Booths 274, 275, 280-281a. Durene yarn. Rep.: J. P. Holt, E. L. Dale, J. F. McCrudden, J. A. Holt, F. W. Hancock, J. R. Kenworthy, T. H. Vetterlein, C. D. Gott, E. F. Golden, H. Buckley, R. Yeabsley, C. B. Rapp, H. Lineberger, J. J. Neil, S. Keare, F. G. Miller, E. J. Neal.

Ace Sheet Metal Works, Philadelphia. Booth 54. Silk moistening trough and silk damp box, humidifying cabinet. Featuring nosplash, nofelts; glass bars substituting for felts. Rep.: F. J. Hejduk.

Adelphia Textile Co., Philadelphia. Booth 343. Hosiery yarns — resist, decorative, and seaming and looping. Featuring double-resist-dyed acetate and Japan tram, immunized yarn, and natural and dyed seaming and looping yarn. Rep.: J. T. Hunter, E. B. Steinmetz, C. Evans.

Allentown Bobbin Works, Inc., Allentown, Pa. Silk, rayon, and cotton bobbins. Featuring specially constructed spools with fiber heads secured to barrels of drive screws. Rep.: B. F. Mack, H. C. Mack, H. W. Mack.

American Aniline & Extract Co., Inc., Philadelphia. Booth 219. Textile chemicals. Rep.: A. B. McCarty, T. P. Key, F. A. Carsten, Jr., H. H. Kirkpatrick, W. P. Gudgeon.

American Bemberg Corp., New York. Booths 251, 260. Bemberg yarns and fabrics. Featuring new superfine filament yarns, 50 to 150 denier; seamless hosiery display. Rep.: Dr. W. Schlie, H. A. Chapell, T. H. Johnson, H. Z. Heuston, C. C. Bassett, John Sherrill, Mrs. Louise Huston.

American Enka Corp., New York. Booths 196, 197. Rayon yarns. Featuring hosiery and underwear made from Englo yarn. Rep.: H. H. Anning, E. W. Martin, J. A. Van Laer.

American Silk & Rayon Journal, New York. Booth 139. Textile publishers.

American Silk Spinning Co., Providence, R. I. Booth 167. Spun yarns. Featuring blended yarns made up in hosiery and underwear.

American Thread Co., Philadelphia, Pa. Booths 198, 199. Cotton and mercerized threads.

American Wool and Cotton Reporter, Boston. Booths 38, 39. Textile publishers.

American Yarn & Processing Co., Mt. Holly, N. C. Booths 348, 349. Combed and carded yarns.

Edward R. Ammon, Inc., Reading, Pa. Booth 32. Inspecting equipment for hosiery. Featuring black glass form which retains smooth surface, and non-rotating form giving clear view of defects on lower side of form. Rep.: E. R. Ammon, W. F. Geibel.

Joseph Amon, Rahway, N. J. Booth 183. Metal moistening equipment for full-fashioned machines. Rep.: Joseph Amon, R. H. Therrell.

Arrow Needle Co., Manchester, N. H., Booth 8. Latch needles. Rep.: G. L. Heaton, Jr., Gomer S. Dillon.

Atwood Machine Co., Stonington, Conn. Booth 211. Silk and rayon throwing machinery. Rep.: Messrs. Lewis, Dewhurst, Sails, Breen, Morton, Lenihan.

Bahnson Co., Winston-Salem, N. C. Booths 21, 22. Type H Humidifier, Humiduct, Master Control, Individual Control, Type J. Rep.: F. S. Frambach, D. D. Smith.

Bausch & Lomb Optical Co., Rochester, N. Y. Booth 371. Optical instruments for the textile industry, including microscopes and accessories, photomicrographic cameras, projection apparatus, dissecting instruments and pocket and hand magnifiers. Featuring improved textile photo micro-projector, fiber diameter measuring projector and wide-field stereoscopic binocular microscope for studying fabric construction. Rep.: W. H. Slocum, E. S. Bissell, J. I. Wexlin.

Boger & Crawford, Philadelphia. Booths 248, 249, 262, 263. Mercerized and cotton yarn. Rep.: R. C. Boger, R. C. Boger, Jr., H. H. Haff, T. F. Haigh, J. R. Nevins, C. R. Beck, W. R. Rietheimer, D. Jonas, F. Campbell, Jr.

Boshamer & Co., Philadelphia. Booth

TEXTILE WORLD *will maintain headquarters in booths 89-92 at the Knitting Arts Exhibition, Philadelphia, April 22 to 26. Cordial invitation is extended to visitors to make this booth their business headquarters while in Philadelphia.*

34. Combed and carded cotton yarns, spun rayon, cotton spun merinos. Feature cotton-spun merinos and covered rubber yarns. Rep.: H. M. Boshamer, D. R. Wilson, H. L. Graff, C. C. Boshamer.

H. Brinton Co., Philadelphia. Booths 117-122. Knitting machines. Featuring machines for fancy designs and various types of ribbers for hosiery purposes, making stripes, mesh patterns, and rubber inlay. Rep.: H. S. Horrocks, J. R. Forrest, W. H. Allerton.

Brugger Winding Co., Philadelphia. Booths 177, 178. Spindleless winder; various types of self-balanced expanding swifts. Rep.: A. H. Brugger, W. A. Dobler.

H. W. Butterworth & Sons Co., Philadelphia. Booths 58-60. Textile finishing machinery. Featuring Tube-Tex Range which extracts, processes, dries, conditions, and folds tubular knit goods in one continuous operation. Rep.: J. E. Butterworth, H. W. Butterworth, Jr., DeH. Butterworth, A. Molte, W. E. H. Bell, H. Lounsbury.

Cannon Mills, Inc., Philadelphia. Booth 243. Cotton yarns. Rep.: S. M. D. Clapper, E. W. Lancaster, C. F. Peffer, H. E. Aken, M. B. Foil, C. V. Albright, C. H. Fenn, J. J. Klumpp, J. C. Bartlett, J. B. Pope, H. R. Barker, H. Crumbliss, G. Ellis.

Clifton Yarn Mills, Inc., Clifton Heights, Pa. Booths 385a, 386. Novelty yarns and fancy twists for hosiery and outerwear. Spun novelty yarn made by Cheney Bros. Rep.: W. Seidel, B. Robbins, C. Mitchell, W. Smith, K. B. Blake.

Clover Leaf Mfg. Co., Honesdale, Pa. Booth 359. Bobbins, steaming crates, reel caps, and redraw brackets having bone fiber as bearings. Featuring use of multicolor fiber principle of thread identification. Rep.: R. P. Bennett, R. E. Marcy, W. A. Spencer, Jr.

Columbia Narrow Fabric Co., Shannock, R. I. Booth 170. Elastics. Featuring woven and braided elastic webbings for underwear and hosiery. Rep.: W. L. McDonald, E. J. Straube.

Charles Cooper Co., Inc., Bennington, Vt. Booths 310, 311. Knitting machinery and knitted fabrics; spring beard needles; latch needles. Featuring ribbed elastic fabrics for bathing suits, underwear, outerwear. Rep.: W. T. Barratt, J. T. Hayes, R. Rogers.

Cotton, Atlanta, Ga. Booths 354, 355. Textile publishers.

Crawford Mfg. Co., Inc., New Brunswick, N. J. Booth 278. Automatic stop-motions for knitting machines, knitting machine needles, sheet-metal pressings, sinkers, slides, jacks, transfer points, sley points, traverse points, guides, etc. Rep.: A. Crawford, F. Crawford, Jr.

Crucible Steel Co., New York. Booth 363. Rep.: R. E. Christie, D. K. Miller.

J. D. Cunningham, Philadelphia. Booth 31. Cotton yarns. Featuring double carded and combed knitting yarns. Rep.: S. R. Cross, J. D. Cunningham, M. E. McMenamin, P. L. Gilkey.

Dixie Mercerizing Co., Chattanooga, Tenn. Booths 220, 221. Mercerized yarns. Rep.: J. B. Frierson, Jr., G. R. West, Jr., E. R. Kimball, D. O. Blevins, F. W. Frank, A. G. Symonds, S. L. Diggle, F. Lemmond, J. B. Cameron, A. Cameron, 3d, C. Keller.

Dubied Machinery Co., New York. Booth 377. New type of Dubied flat hand knitting machine. Featuring display of latest fashionable fabrics made on Dubied machines. Rep.: E. O. Spindler, M. Wolf.

Duffy Silk Co., Buffalo, N .Y. Booths 356, 357. Thrown silk. Rep.: G. Duffy, C. G. Duffy, Jr., P. Hemmerich, C. Walter Seidel, C. A. Lorenz.

Jno. Dunlop's Sons, Inc., New York. Booth 370. Silk yarns on cones and skeins for the hosiery trade. Featuring use of nine-meter system for testing raw silk for cleanliness; also soaking method for protection of needles. Rep.: H. Boehlert, A. Osborne, G. F. Fisher, B. H. H. Noble, C. A. Snodgrass.

Duplan Silk Corp., New York. Booths 322, 323. Thrown silk and rayon. Rep.: G. Friedlander, E. Rohr, W. P. Smedley, W. S. Wheeler, Jr., H. H. Cannon, G. C. Graves, Jr., R. H. Griffith, G. E. Ward, O. H. Haas, D. L. Ryan.

DuPont Rayon Co., Inc., New York. Booths 205, 206, 233, 234. Rayon yarns and fabrics and garments made therefrom. Rep.: C. G. Hookey, R. C. Martin, F. B. Draper.

Ewing-Thomas Corp., Chester, Pa. Booth 33. Mercerized yarns. Featuring Metro-Shade Yarns Nos. 1 and 2, and merchandise made therefrom. Rep.: M. Ewing, H. A. Stafford, D. Thomas, J. J. Klumpp, G. Ellis, H. Crumbliss.

Fairchild Publications, New York. Booths 366, 367, 396, 397. Textile publishers.

W. F. Fancourt & Co., Inc., Philadelphia. Soaps, oils, and specialties for dyeing, degumming, delustering and conditioning silk and rayon. Featuring Fanco Aquapel, new water-repellent; and Fanco Regenasol D-82, a chemical which prevents lime formation, thus aiding in odor and spot elimination in knit goods. Rep.: W. F. Fancourt, Jr., W. F. Fancourt, 3d, C. T. Harvey.

Fidelity Machine Co., Philadelphia. Booths 245-247, 264-266. Tubular knitting machines. Bobbin winders for elastic and special yarns, multiple-die creasing machine, braiding machine, and complete line of Universal ribbers. Featuring Auto-J. P. Model "P" machine—for making women's gauntlets, 3 colors in a course, three feeds, 6 color striping, two design wheels, patent reverse mechanism on third feed.

J. A. Firsching, Inc., Utica, N. Y. Booths 334, 335. Featuring new automatic length cutting, counting, and laying-up machine, which cuts from ¼ in. upward, no gears being required to make changes; lays up cuts in any size groups desired on a canvas apron. Rep.: J. A. Firsching, Sr., R. A. Firsching.

Fletcher Works, Philadelphia. Booths 215-218. Throwing machinery, extractors. Featuring full-length 200-spindle Apex twister, new 17-in. extractor. Rep.: O. W. Schaum, R. J. Bartholomew, W. W. Rometsch, Jr., C. W. Moore, H. N. Rahn, S. Morton, E. A. Monnia.

J. B. Ford Sales Co,. Wyandotte, Mich. Booth 291. Chemicals. Featuring Wyandotte wool scouring special and silk strip. Rep.: F. S. Klebart, Jas. F. Flaherty, J. W. Turner, H. E. Moyer.

Foster Machine Co., Westfield, Mass. Booths 296, 297, 319. Silk and rayon cone winders, winding knitting cones. Featuring attachments for conditioning yarn in winding operation, also for winding yarn dry. Rep.: D .W. Bridgeman, T. E. Connor, C. B. Terry, R. W. Ensign.

Franklin Needle Co., N. Franklin, N. H. Booth 158. Knitting needles. Rep.: G. L. Hancock, J. A. Eberly.

Sherman W. Frazier, Washington, D. C. Booth 153. Featuring hosiery testing machine, measuring distensibility, recoverability, stretch-endurability of women's hosiery. Rep.: S. W. Frazier.

Friedberger-Aaron Mfg. Co., Philadelphia. Booth 18a. Elastic textiles.

General Electric Co., Schenectady, N. Y. Booths 154, 155. Textile motors, contactor switches for control of small motors, thrustor, heating units, Glyptal products.

General Electric Vapor Lamp Co., Hoboken, N. J. Booths 156, 157. Cooper Hewitt lighting for all departments in weaving and knitting mills; new high-intensity mercury-vapor lamp. Rep.: C. F. Strebig, D. R. Grandy, W. R. Flounders, R. B. Chipman, L. F. Gerisch, F. Moos.

Grand Rapids Textile Machinery Co., Grand Rapids, Mich. Booths 129, 161, 162. Feature new Roto-Press and improved General Upright finisher II; also two all-metal scouring, fulling, and dyeing machines; extractor loader and unloader. Rep.: W. H. Shields, A. Stormzand, W. F. Moon.

Grove Silk Co., Dunmore, Pa. Booths 9, 10. Hosiery tram. Featuring direct knitting. Rep.: G. J. Schautz, A. G. Schautz, G. J. Schautz, Jr., C. W. Eaton, W. T. Cheatham.

Hampton Co., Easthampton, Mass. Booths 214, 225. Durene and rayon yarn. Rep.: F. B. Handy, B. H. Rehbaum, R. B. King, R. B. Lake, W. P. McCulloch, F. W. Kingsley, W. H. Smith, W. T. Forbes, Jr., J. S. Blodgett.

Oscar Heineman Corp., Chicago. Booths 298, 317. Silk and rayon knitting yarns. Rep.: P. W. Trudeau, F. E. Morey, D. G. Brewster, L. Wotan, C. D. Gott, N. P. Murphy, W. J. Crummer.

Hellwig Silk Dyeing Co., Philadelphia. Booth 195. Direct and resist-dyed silk, weighted and pure dye; rayon and novelty yarns; finished knit merchandise. Rep.: W. J. Gutekunst, R. M. Gutekunst, G. A. Smith, H. C. Gutekunst.

Hemphill Co., Pawtucket, R. I. Booths 99-104. Hosiery machines equipped with automatic clamp weight for speed in transferring, and with the sleeve cylinder for transferring on low needles. Featuring new 3½-in. plain machine equipped with 8-step Banner wrap stripe attachment with 3-color clocking and 12-move horizontal striping attachments. Wrap-stripe attachment on 12-step reverse plating machine, which will demonstrate a 12-color change attachment, attachment to control horizontal-stripe attachment from 12-step pattern drum, and plain-sole attachment; independent-step, 24-color wrap-stripe machine; split-foot machine equipped with 7 regular and 1 auxiliary yarn levers, automatic cam block and yarn lever for transferring, stitch evening, and yarn tension control equipment, and transfer locating equipment; plain machine with rapid transferring devices; rib-to-toe machine with electric stop motion; 24-step reverse-plating machine with special attachments. Rep.: R. H. Lawson, A. Hutton, Jr., G. MacDowell, J. MacDowell, H. G. Gross, R. Quinlan, A. Pelkey.

John W. Hepworth & Co., Inc., Philadelphia. Booth 200. Looping machines. Rep.: G. Keyser, J. J. Sander.

Louis Hirsch Textile Machines, Inc., New York. Booths 207-209, 230-232. Representing Karl Lieberknecht, manufacturers of Kalio machines; Otto Scherf, manufacturer of Scherf needles; and Helios, manufacturer of Helios

sinkers. Kalio machines will be in operation at nearby mills. Rep.: L. Hirsch, A. Friedman, G. A. Urlaub, E. Ruckel.

R. Hoe & Co., Inc., New York. Booth 176. Box end imprinting press. Rep.: C. B. Knudsen.

Alfred Hofmann, Inc., West New York, N. J. Booths 300, 301, 314, 315. Hosiery samples knit on firm's full-fashioned and jacquard machines; spring-beard needles, and points. Rep.: G. Hofmann, C. E. Weinberg, C. A. Kroenig, P. Schoenster, H. Wirth.

Industrial Dryer Corp., Stamford, Conn. Booths 140, 151. H-W conditioner for silk and cotton yarn, rayon conditioner, and Harris humidifier. Rep.: G. D. Millspaugh, C. M. Kitzmiller.

Industrial Rayon Corp., Cleveland, O. Booths 85, 88. Rayon yarns and knitted fabrics. Rep.: G. Brooks, L. A. Wolin, C. R. White, P. B. Shannon, A. H. Skall.

International Nickel Co., Inc., New York. Booths 13, 14. Mill and fabricated forms of Monel Metal for use in textile plants and dyehouses; nickel-clad-steel equipment. Rep.: C. J. Bianowicz, E. A. Turner, F. L. LaQue, F. R. Bailey.

Loyal T. Ives Co., New Brunswick, N. J. Booth 163. Spring-beard needles, sinkers, jacks, and special parts. Rep.: T. Whitlock, E. A. Quint, H. W. Thomas, W. W. Heath, R. Bergen.

Jacquard Knitting Machine Co., Inc., Philadelphia. Booths 304, 305. Circular jacquard knitting machines and their products. Rep.: Harry Albertman.

Jasper-Groz Needle Co., Inc., New York. Booth 379. Knitting machine needles made by Theodor Groz & Soehne, Ebingen, Germany; Pemco dye nets made by La France Industries, Philadelphia. Rep.: E. W. S. Jasper, E. L. Jasper, S. A. Farrand.

Johnston Mills Co., Charlotte, N. C. Booths 210, 229. Durene, combed and carded cotton yarns. Rep.: J. W. Ferguson, W. W. Peters, F. N. Belk, Wm. J. Yates, R. M. Bechtel, F. M. Shannonhouse, J. S. Wilcox.

W. H. & F. Jordan Jr. Mfg. Co., Philadelphia, Pa. Booth 133. Textile oils and specialties. Rep.: C. Jordan, H. B. Dohner, W. A. Stringfellow, E. C. Titus.

Kahn & Feldman, Inc., New York. Booth 212. Thrown yarns. Rep.: N. Lewis, Jos. Donahue, R. A. Adams.

Knit Goods Weekly, New York. Booths 131, 132, 159, 160. Textile publishers.

Knit Goods Publishing Corp., New York. Booths 77-80. Textile publishers.

Kaumagraph Co., New York. Booths 18-14. Dry transfers, embossed seals, lithographic material; demonstrating use of dry transfer for identifying knit goods; also solvents for spot elimination and stamping ink. Rep.: G. M. Porges, J. L. Reeves, H. A. Keech, A. D. Crawford, N. E. Griffith, D. O. Blevins.

Laconia Needle Co., Laconia, N. H. Booth 191. Latch needles, screw and rivetless. Rep.: A. B. Sanborn, H. D. Sanborn, C. B. Paulus, W. H. Groat.

W. T. Lane & Bros., Poughkeepsie, N. Y. Booth 289. Canvas baskets, hampers and trucks. Rep.: R. T. Lane.

R. K. Laros Silk Co., Bethlehem, Pa. Booths 52, 53. Commission throwsters. Rep.: R. K. Laros, T. H. Mueller.

Laurel Soap Mfg. Co., Philadelphia. Booth 181. C. E. Bertolet, A. H. Gaede.

Percy A. Legge, Philadelphia. Booth 347. Knitting yarns, including fine French-spun worsted. Rep.: E. Legge, C. W. Neeld, Jr., O. L. McCurdy.

Leighton Machine Co., Manchester, N. H. Booth 362. Knitting machines. Featuring special machine for hockey caps. Rep.: A. B. Gould, F. C. Golden.

Lestershire Spool & Mfg. Co., Johnson City, N. Y. Booth 190. Fiber-head spools, special equipment for silk-rayon spinning machines; stop motions for silk-rayon warpers; Pyrex steaming bobbins. Rep.: H. D. Clinton, H. D. Clinton, Jr.

William A. P. MacKnight, Philadelphia, Pa. Booth 290. Cotton yarns. Rep.: W. A. P. MacKnight, M. P. Glynn, Jr., C. J. Swift, A. E. Davis.

Malina Co., Inc., New York. Booths 336, 337. Natural and converted rayon yarns; novelty yarns. Feature Rainbow Nub-Yarn and Rabbithair-Yarn. Rep.: L. Malina, I. J. Aibel.

Markem Machine Co., Keene, N. H. Booths 299, 316. Marking, printing machines used in hosiery, underwear, yarn, silk throwing, bleaching and other textile divisions. Featuring power-driven and hand-operated marking and printing devices; automatic production of labels and printing of designations on box ends without removing lids; new Model 125 high-speed label printer. Rep.: C. A. Putnam, C. E. Putnam, O. B. Meyers.

Matthias Paper Corp., Philadelphia. Booth 327.

Mayfair Yarncraft, New York. Booths 192, 193. Yarns for knitted outerwear.

C. R. McGinnes, Reading, Pa. Booth 325. Knitting yarns. Rep.: C. R. McGinnes, T. L. Wilson, E. A. Ring.

Merkel Bobbin Co., Allentown, Pa. Booth 184, Bobbins for silk and rayon throwsters and weavers.

Merrow Machine Co., Hartford, Conn. Booths 340, 351. Machines for trimming, overseaming, blind-stitch hemming, and overedging. Featuring new high-speed models.

Clarence L. Meyers, Inc., Philadelphia. Booths 302, 303, 313. Cotton, Durene, merino, wool and silk knitting yarns. Rep.: C. L. Meyers, M. M. Meyers, Maxwell Meyers, G. C. Ballenberg, H. G. Riebe, E. W. Fowler, H. W. Schroeder, C. Bender, G. E. Maurer.

James E. Mitchell Co., Philadelphia. Booth 318. Cotton yarns. Rep.: A. Gagner, E. L. Merritt, Jr., J. J. Mitchell, Jr., J. J. Mitchell 3d, A. W. Morton, Jr., B. G. Murray, W. J. O'Neill, R. H. Smith, R. Whitaker.

L. P. Muller & Co., Philadelphia, Pa. Booth 186. Cotton yarn. Rep.: T. H. Nicholson, H. R. Penington, J. L. Muller, J. T. Miller, H. G. Harper, T. C. Brown.

Narrow Fabric Co., Reading, Pa. Booths 213, 226. Lastex elastics for hosiery, underwear and shorts. Featuring lacy Lastex hosiery tops and shorts elastics. Rep.: Messrs. Stiteler, Dudley, Klein, Sweeney.

Neva-Wet Corp. of America, Inc., New York. Booth 166. Fabrics and apparel treated by Neva-Wet waterproofing process. Rep.: Mrs. G. A. Frank.

Onyx Oil & Chemical Co., Jersey City, N. J. Booth 358. Samples of processing and finishing compounds used in boiling-off, dyeing, dulling, spotproofing, and finishing of hosiery and underwear. Rep.: J. W. Huber, E. A. Brick, L. P. Brick, C. E. Maher, E. W. Klumph, C. D. Ehrengart, J. E. Trezise.

Paramount Textile Machinery Co., Chicago. Booths 239, 240, 254-257. Dual-heat hosiery drying machines; hosiery forms and tables; inspection machines, looper attachments. Rep.: H. Pope, L. H. Oswald, T. W. Prosser, P. La Montagne, L. S. Kleinfeld, W. H. Albertson, W. L. Coggins, O. A. Siegel.

Peace Dale Braiding Co., Shannock, R. I. See Columbia Narrow Fabric.

Penn Worsted Co., Philadelphia. Booth 189. Novelty yarns. Rep.: W. T. Porter.

Permutit Co., New York. Booth 365. Zeolite water softeners; single valve control unit, mechanical CO_2 indicator and recorder.

George B. Pfingst, Inc., Philadelphia. Booth 312. Thrown silk yarns for full-fashioned and seamless knitting; direct knitting yarns. Rep.: G. B. Pfingst, J. J. Jacobs, J. P. Reynolds.

Philadelphia Drying Machinery Co., Philadelphia, Pa. Booth 182. Latest improved drying machinery for raw stock, skeins, warp yarns, hosiery, underwear, toweling, and piece goods. Also tenter dryers, carbonizing equipment, and vacuum extractors. Rep.: W. W. Sibson, H. O. Kaufmann, C. H. Reumann.

Philadelphia Metal Drying Form Co., Philadelphia. Booths 169, 194. Hosiery finishing equipment. Featuring latest types of hosiery drying forms and machines for inserting tissue and Cellophane in hosiery. Rep.: P. Guggenheim, J. Seligman.

Max Pollack & Co., Inc., New York. Booth 168. Cotton and mercerized sewing thread in all colors. Rep.: J. Pollack, A. W. MacBride, C. L. Darlington, F. A. Stockwell, J. D. Corbett.

Proctor & Schwartz Inc., Philadelphia. Booths 252, 253, 258, 259. Automatic boarding, drying, and stripping machine for hosiery, equipped with conditioning attachment. Rep.: Major C. T. Griffith, C. S. Tiers, H. B. Lex, W. J. Merrigan, Jr.

The Procter & Gamble Distributing Co., Cincinnati, O. Booth 172. Textile soaps, featuring Olate. Rep.: T. E. Waters, E. M. Kelly, G. H. Best, W. B. Tucker, W. W. Bray, J. B. Crowe, H. H. Bésuden.

Quaker City Chemical Co., Philadelphia. Booths 173, 174.

Reece Button Hole Machine Co., Boston. Booths 338, 339. Buttonhole machinery. Featuring adjustable fly-bar machine for knitwear, cord- and thread-trimming buttonhole machines, and high-speed single-thread chain stitch straight buttonhole machines. Rep.: J. H. Pikul, F. O. Paul.

Robert Reiner, Inc., Weehawken, N. J. Booths 368, 369, 394, 395. Full-fashioned hosiery machines. Rep.: Dr. Robt. Reiner, Fritz Lambach.

Rochester Engineering & Centrifugal Corp., Rochester, N. Y. Booths 223, 224. Featuring 30x20-in. and 30x36-in. Super dyeing machines; 17-in. Monex extractor; 40-in. O-T extractor. Rep.: R. C. Caine, C. F. Fischer, R. S. Shaffer, H. C. Rembold.

Royersford Needle Works, Inc., Royersford, Pa. Booths 352, 353. Spring-beard needles, sinkers, dividers. Rep.: F. Heller, D. Breidenbach.

San-Knit-ary Textile Mills, Philadelphia. Booth 37. Net bags for dyeing hosiery and for soaking silk; winders waste bags. Rep.: J. E. Casper.

Sauquoit Silk Mfg. Co., New York. Booth 190. Silk hosiery yarns. Rep.: M. A. Schoettle, Thos. Cowan.

Scholler Bros., Inc., Philadelphia, Pa. Booths 187, 188. Textile soaps, softeners, sulphonated oils, finishing oils, and finishes for cotton, wool, and silk. Featuring combination dull, highly repellent

and spot-proof finish for hosiery. Rep.: F. C. Scholler, L. M. Boyd, J. F. Noble, G. Pickering, E. S. Atkinson.

Harry Schwartz, Brooklyn, N. Y. Booth 36. Novelty knitting yarns. Rep.: H. Schwartz, J. Green, L. Engel.

Scott & Williams, Inc., New York. Booths 105-116. Circular knitting machines for plain and fancy hosiery for women, men, and infants; also special circular machines for underwear and special-fabric manufacture. Knee-high feature: women's hosiery machine, 25-step K spiral gusset-toe machine equipped with new attachment for laying-in rubber in inside of welt. Various models of HH half-hose machine for reverse plated patterns. Featuring 25-step Model HH-NRP machine for making reverse-plated patterns by needle-deflective method; Model HH-PW machine knitting complete hose, with embroidery patterns; plain HH machine for producing men's heavy half hose and boot-length hose; laying-in rubber attachment applicable to any type of HH machine. Model ES 36 wrap machine equipped with new color-in-color and color-beside-color attachment. Rep.: F. W. Smith, H. Swinglehurst, W. L. Toy, H. J. Kelly, W. Houseman.

Sees & Faber Co., Inc., Philadelphia. Booths 15, 16. Hosiery mill specialties and electrical tools. Featuring new friction leather and improved coursing pad, motor bases, winder belts, and carrier screws. Rep.: R. W. Sees, H. Schwarz, A. Beetle, F. Buckley, J. Dietrick, V. North, E. Sees.

Silk Grading Testing Laboratory, Inc., New York. Booth 326. Methods of testing raw and thrown silk. Featuring grading and quality-control methods. Rep.: H. Levine, F. Braig, J. Johnston.

Singer Sewing Machine Co., New York. Booths 201-203, 236-238. Displaying 17 machines, part mounted on Singer double-trough and double flat electric transmitter power tables and driven by the newly developed 39 Series electric transmitter. Remaining machines mounted on 5-ft. Universal safety tables two-shaft drive. Featuring new high-speed feed-off-the-arm chainstitch machine; high-speed feed-off-the-arm lockstitch machine; Model 96-SV-25 high-speed machine, 4,000 stitches per min.; 150-W-1 high-speed lockstitch machine; and 147 Class machine. Diehl Mfg. Co. will share booth.

R. L. Sjostrom & Co., Lawrence, Mass. Booth 175.

Smith, Drum & Co., Philadelphia. Booths 23-30. Hosiery and skein dyeing machines, hosiery inspection forms, and double sole thread cutters. Rep.: Harry S. Drum, W. C. Dodson, R. D. Howerton, J. C. MacDougall.

Southern Textile Machinery Co., Paducah, Ky. Booths 344-346. Dial loopers, Wright and Sotco models; cylinder loopers. Rep.: J. T. Balthasar, R. N. Parkin, Chas. Holcomb.

Earl M. Spencer, Philadelphia. Booth 330. Knitting yarns. Carded yarns made by Valdese Mfg. Co. Featuring Crinklecrepe and Creptone for half-hose, both made by Sellers Mfg. Co. Rep.: E. M. Spencer, B. E. Jordan, Francis Garrou.

Spool Cotton Co., New York. Booth 342. Clark's O.N.T. threads for knitwear manufacture. Rep.: W. T. Kennedy.

Stampograph Co., Inc., New York. Booth 35. Dry transfers in one and two colors for trademarking, etc., on hosiery, silks, woolens. Featuring Chadwick dry transfer stamping machine; patent double strip transfers. Rep.: G. Chadwick.

Standard-Coosa-Thatcher Co., Chattanooga, Tenn. Booths 244, 250, 261. Cotton yarns, mercerized, dyed, and gassed; sewing threads. Rep.: J. S. Verlenden, R. J. Mathewson, W. H. Thatcher, C. F. Smith, M. A. Henderson, W. S. Lawson, J. P. Rickman, W. M. Hall, E. R. Dillmore, G. H. Greene.

Standard-Trump Bros. Machine Co., Inc., New York. Booths 105-116. Machines for making men's and children's plain, fancy, and broad-rib half hose. Featuring new attachment on Models 80-W and 80-W Shog machines, known as multiple-needle wrap attachment, by which four needles can be wrapped at a time with each wrap finger; Model H machine equipped with five color selective striper. Standard gusset-toe machine for infant's socks. Komet machines, made by Bentley Engineering Co., Leicester, England, for knitting men's and children's broad-rib hose. Rep.: See Scott & Williams.

A. M. Tenney Associates, Inc., New York. Booth 279. Acetate yarns manufactured by Tennessee-Eastman Corp. Rep.: C. C. Mattmann, Jr.

Textiles, Inc., Gastonia, N. C. Booth 242. Cotton, spun rayon and wool mixture yarns; fabrics made from novelty yarns. Rep.: A. W. Latta, C. D. Gray, P. H. Thompson, S. G. Haigh, H. G. Dolliver, J. A. Whelan, L. F. Warren, G. S. Johnston, H. D. Skinner, G. T. Hutchinson, A. A. Dinsmore.

Textile Machine Works, Reading, Pa. Booths 267-271, 284-288. Samples of hosiery produced on Reading full-fashioned machines. Rep.: N. E. Richards, H. Printz, R. W. Weaver, E. A. Shoemaker, P. Kroener, E. Kalbach.

Textile World, New York. Booths 89-92. Textile publishers.

Tompkins Bros. Co, Syracuse, N. Y. Booth 222. Knitting machines. Featuring shaker jockey cap knit on new automatic machine. Rep.: W. A. Ingalls, G. L. Logan.

The Torrington Co., Torrington, Conn. Booths 276, 277. Knitting machine and sewing machine needles.

Tubize Chatillon Corp., New York. Booths 380, 381. Rayon yarn and knitted fabrics. Rep.: E. D. Bryan, J. R. Morton, E. H. Bogardus, C. D. Swartout, N. B. Richardson, L. F. Smith.

Union Special Machine Co., Chicago. Booths (in cooperation with American Safety Table Co.) 272, 273, 282-283a, 294, 295, 320, 321. Sewing machines for hosiery and underwear, and machines used in making dress shirts, work shirts, etc. Featuring new Forty-One-Two seamer for attaching elastic as required in knee-length hosiery, and other elastic attaching equipment. Rep.: T. S. Whitsel, A. E. Brauch, N. V. Christensen, C. S. Thompson, A. S. Riviere, A. J. Feigel, T. C. Wiebers, P. T. McLendon, C. E. Stevens, W. E. LeRoy, P. J. Steeper, E. E. Gratsch, G. A. Rundle.

United Elastic Corp., Easthampton, Mass. Booth 324. Elastic for hosiery and underwear. Rep.: G. S. Van Voorhis, W. E. Dalby, H. O. Hollingworth, E. R. Boehm.

U. S. Rubber Products, Inc., New York. Booths 382-384. Featuring articles made of Lastex yarn. Rep.: Paul Linke, I. J. Fodor.

United States Testing Co., Inc., Hoboken, N. J. Booth 392. Raw and thrown silk testing, including soaking, finishing, dyeing, and inspection. Rep.: A. L. Brassell, S. B. Walker, P. R. Evans, C. J. Brick, Dr. O. H. Hougan.

U. S. Textile Machine Co., Inc., Scranton, Pa. Booths 331, 360, 361. Throwing machinery. Rep.: P. J. Thomas, G. Westcott, A. W. Thomas.

Universal Winding Co., Boston. Booths 123-128. Textile winding machinery. Featuring new machine for winding cones for the cotton knitter; machine winding Pineapple cones for full-fashioned knitters; Disc-quil tension; Bobbin Spool; rayon coner. Rep.: E. O. Smith, R. Leeson, R. L. Chisholm, T. L. Cotter, Wm. J. Quinn, F. S. Treat.

Victor Ring Traveler Co., Providence, R. I. Booth 50. Ring travelers. Rep.: Byron H. Waterman, John A. Hull.

Viscose Co., Philadelphia. Booths 292, 293. Rayon yarns. Rep.: W. D. Benson, T. H. Andrews, M. H. Morse.

Warwick Chemical Co., West Warwick, R. I. Booth 378. Finishing compounds and throwing oils. Featuring Impregnole, a shower-proofing compound. Rep.: Dr. Dale S. Chamberlin.

William Whitman Co., Inc., Boston. Booths 328, 329. French-spun worsted and merino yarns; Bradford-spun worsted, spun rayon, and cotton yarns; mercerized, cotton-spun merino yarns; and combed and carded cotton yarns. Garments made of Nonquitt spun rayon and new mixed novelty yarns. Rep.: H. H. Whitman, W. C. Ballard, W. A. Fuller, H. C. Leswing, H. S. Hicks, J. L. Stickley, R. J. Walsh, J. E. Varney, W. C. Strugnell, K. N. Merrill, C. J. Welles, M. H. Horchler.

Wildman Mfg. Co., Norristown, Pa. Booths 93-98. Knitting machinery. Rep.: K. Howie, F. E. Paul, J. J. Brennan, D. C. Bellis.

Willcox & Gibbs Sewing Machine Co., New York. Booths 278a, 279a, 306-309. Featuring Fastlock, new machine which fastens elastic webbing to tops of knee-length hosiery, applicable to silk, cotton, wool, mesh hosiery; one operation fastens elastic without use of welt, fold or seam. Flatlock machine for seaming knit underwear, Feldlock and Feldlock Dualfeed machines for lapseam felling; lockstitch, overlock, intermittent yoke ruffling, chainstitch label, Uniart embroidery, and pinking and seaming machines. Rep.: G. M. Lewis, A. E. Selby.

Wolf Brothers, Philadelphia. Booth 37b. Paper merchandise bags for branded hosiery, and Sylphrap transparent Cellulose envelopes for packing hosiery. Rep.: W. P. Brockermann, Jr., W. L. Wolf, J. A. Hedges.

Jacques Wolf & Co., Passaic, N. J. Booth 350. Textile chemicals. Featuring Deluster S-342-E, dull finish W-716, and dull finish W-8-F, freely suspending pastes for all types of hosiery; and waterproof W-559, a compound for proofing against spots, rain, shower, and water. Rep.: F. G. Henckel, G. J. Desmond, Arnold Pfister.

Thos. Wolstenholme Sons & Co., Inc., Philadelphia. Booths 332, 333. Spun worsted and merino yarns. Rep.: L. F. Schaeffer, F. S. Krecker, G. C. Zimmerman, N. Schwartz, L. F. Schaeffer, Jr.

O. F. Zurn Co., Philadelphia. Booth 173, 174. Textile oils. Rep.: C. J. Curran, O. F. Zurn, J. L. Wilson, O. F. Zurn, 3d, A. Winser, R. Smith, W. S. McNab, H. E. McNab, R. Cowan, H. F. Zurn, J. M. Zurn, Jr., M. J. Nolan.

Seamless Trends...

By George E. Cottrell
Consulting Knitting Engineer

Advances in technology continue to improve character of circular hosiery

IMPRESSIVE improvements have been made during the last few years in the design and construction of women's seamless hosiery. We have seen the advent of the fashioned gusset toe, the cradle sole, and the "square" heel which gives the hose a shape more comparable to that of the full-fashioned stocking. We have also seen an improvement in fineness of gage that would have been declared impossible only a few years ago. With these developments has come the improved hem top with alternate courses of loose and tighter stitches, allowing heavier yarns to be used in this part of the stocking and at the same time giving ample elasticity.

Every few years someone asks this question: "Is it possible in seamless knitting to use finer gages?" I remember well when the 220-needle hose first came into being. It was thought at that time to be the limit of fineness; but, as a result of excellent cooperation between machine manufacturer and needle-maker, we have seen gages progress successively to finer and finer stages, until now we have 360 needles in a seamless hose! I think that it is now safe to say that we have reached the limit of fineness—not that it is mechanically impossible to make finer-gage machines, but it appears that the popular demand in women's seamless hosiery will swing toward the coarser gages.

Wide Variety Possible

With the equipment that is available to the manufacturer, there are possibilities for a wider variety of styles in seamless hosiery than there has ever been within the memory of the writer. Take the field of sportwear, for example. This field, I believe, offers the best avenue to those manufacturers who have originality. There is opportunity for good business in a line of quality sport shorts for women, for example—especially in the shorts with the elastic top, which eliminates the use of garters. Large possibilities exist in the various pattern effects that one may employ.

There is, it seems to me, an important improvement in women's seamless hosiery that should be forthcoming in the near future, and that is the development of a split foot that will follow the lines of the present tapered high-spliced heel and the tapered sole so as to eliminate the trimmed ends of the splicing. With such a foot one would indeed have a quality hose. I can see no real reason from a mechanical point of view why such an improvement cannot be made.

In working out such a machine it would be well, at the same time, to develop an under-drive for it, so that when it is making the oscillating movements, the cylinder has a uniform motion in producing the split foot. In the present state of the art the needle cylinder does not have such a motion during this part of the stocking, and this fact causes an uneven appearance of the fabric. An under-drive that would give the needle cylinder a uniform speed while the needles are drawing yarn and slowing down only near the ends of the oscillations, would greatly eliminate the unevenness referred to.

There is another improvement due in the split-foot machine, and this is in the yarn-retrieving mechanism for taking up the slack in the split-foot yarns. In the present mechanism there is too much variation in the tension of the yarns during the knitting of the split-foot part of the hose. This variation is due to the inertia of the moving parts of the mechanism, and also to the tension release. Such a retrieving device will eventually be designed.

Among other problems in seamless-hosiery knitting that should have greater attention is this one. Anyone who has compared the fabric produced by a circular latch-needle machine with that produced by a full-fashioned spring-needle machine will notice that there is a marked difference in the appearance of the two fabrics. It seems to the writer that there is a chance to improve the seamless fabric so that it will approach more nearly the appearance of the full-fashioned fabric. Possible solutions of this problem will be discussed in detail in a later article by the author.

Although machine manufacturers are constantly experimenting and developing improved devices for the trade, much faster progress could be made if individuals in the mills who have ideas could be given more time for experimenting. Giving such men an opportunity to exercise their ingenuity would, in the long run, pay dividends to the mill.

Style and quality lead

The Half-Hose

FIVE years ago this spring a boat docked at New York. Its cargo included several bales of Scotch plaids and tartans consigned to a clothing manufacturer. There is nothing unusual about a boat docking at New York; there seemed to be nothing unusual about the cargo of this particular vessel. Unobtrusively these colorful Scotch fabrics made their entrance into this country. There were no bands, no cheering crowds, no ticker tape flying from windows to greet them. But these plaids and tartans worked their way into the heart of the men's wear field, and today their influence is evident in the coats on our backs, the ties we wear, and the hosiery we buy. Thus, one of the most popular hosiery styles this spring is the modified version of the original flashy Glen Urquhart Plaid. Thep resent patterns are small and neat, finding their place and form in Tattersall, Shepherd, Gun Club, Hounds Tooth, District Checks, Argyles, and Spitalfield effects.

As is true after any period of depression, human nature calls for something gay and colorful—away from the dullness and drab feelings of the past. The color pendulum has swung back again this spring. Quiet patterns and conservative colors have held the spotlight in past seasons. This spring, the consumer wants life and color in his hosiery patterns, and the year 1935 will find the greatest display of half-hose fancies yet experienced.

The plaid influence is illustrated in Figs. 1 and 2. Figs. 1 and 1A are color variations of the same pattern. These patterns, due to their intricate all-over effects, look very smart when worn with plain-color flannels and suitings. Vertical pin or "derby" stripes and clocks are as popular as ever this spring, the increase in stripes and chalk stripes in men's trousers and suits accounting for their strong continued popularity. Figs. 3 and 4 illustrate two patterns of this type. Fancy clocks have never failed in popularity. Their ready adaptability to wear with various types of suitings has accounted to a great degree for this staple demand. Another argument advanced for the popularity of the clocked half hose is the neat, slender effect given to the ankle of the wearer.

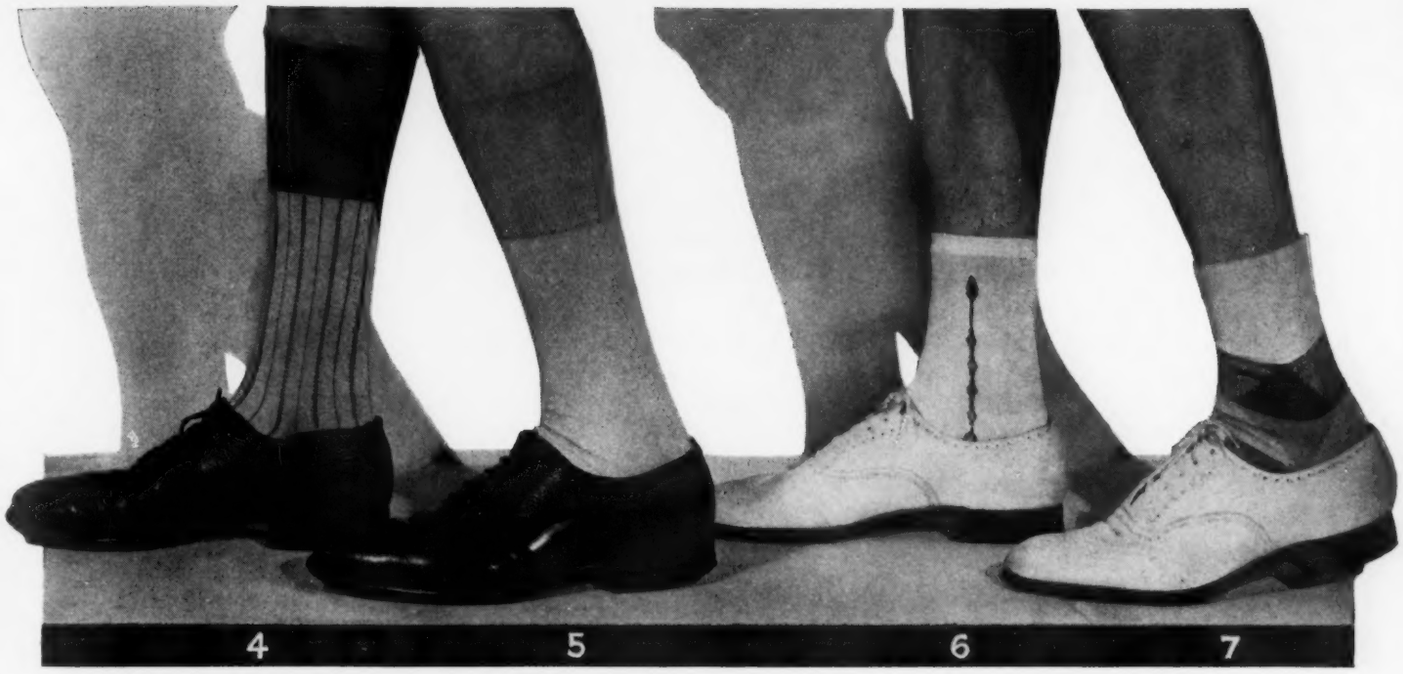
The newest note in men's clothing is the rougher type of fabric. This is represented in unfinished worsteds of tropical weight and the well-known Harris tweeds. The correct hose for wear with this type of clothing are the plainer, less fancy pattern types.

A novelty hose which is extremely popular this season is shown in Fig. 5. It is a version of bouclé or ratiné development. A resemblance to a light terry cloth fabric gives this hose acceptance for sport or spectator wear.

Recent growth in popularity of the light-color and white suits in washable fabrics for men has brought an unprecedented demand for whites and pastels in hosiery. Originally light-color suitings and pastel hosiery were confined to the South, where the sun climbed a little higher, and white suits and mint juleps were the byword. Today, the North has its version of mint juleps, and realizes for the first time that during the summer months it is smart to be cool. White and pastel shades for suitings and hosiery have swept the country.

Coupled with the growth of lighter colored hosiery has come the steady demand for short, garterless hose. At present the popularity of the men's elastic-top short hose is unparalleled. The ankle sock for men has a definite calling—no garters, less material covering the leg—it is the answer in coolness and comfort. Fig. 6 illustrates the elastic-top hose. Knit with a Lastex band or webbing at the top of the hose, it is constructed to fit snugly and comfortably on the leg, and is particularly recommended for wear with linen or seersucker clothing.

With the temporary retirement of the knicker and the



Parade

By Richard J. Frost
Stylist, Allen-A Co., Kenosha, Wis.

advent of the men's slack or long trouser, a short slack type of sock has crept into the style field. Fig. 7 illustrates this type of hose. Constructed of high-grade lisle, and brilliantly colored, this hose can be worn straight, or with cuff turned or rolled. The appeal of this type of hosiery is not only for sport, but for every-day wear.

As in no other year on record, 1935 ushers in a marked demand for quality in men's hosiery. From the large buyer to the small, there is definitely a careful attitude toward quality style selection. All are buying more readily, but more critically. These same merchants have learned a lesson from the past few years; namely, that price does not mean an increase in sales where quality cannot be offered with it. Unfortunately, quantities of distress merchandise have been unloaded to dealers throughout the country in the last few years. However, dealers are refusing to continue to take the "licking" this merchandise gave them. The consumer, in turn, is fed up with bargain specials. In the future he is going to look to quality for his money. Eye and price appeal are hard to swallow when the laundry returns a misshapen piece of wadding which vaguely reminds one that once it was a sock.

Half-hose manufacturers the country over are "trading up" in their products. They realize the importance of regaining a quality standard. New machinery is being purchased to strengthen or add to the prestige of their products. The art of knitting half hose seems to have returned to basic principles. Today there is closer supervision than ever before, starting with the knitting operator and carrying on through the mill's finishing departments. In brief, hosiery is being knit to look like hosiery and to wear like hosiery, and not as facsimiles to be rushed through for somebody's bargain day.

More attention is being paid to the wearing qualities of half hose. Reinforcements to the tops, heels, toes, and soles are advancements in half-hose knitting that previous years have not recognized as important. Machine attachments are available which knit a more shapely, better-fitting toe than was possible on the older type of equipment. The knitting and foot sizing of half hose are receiving more attention. In the past the consumer has unknowingly purchased a pair of attractive and seemingly low-priced hose of a given size, only to find after laundering that the size had been reduced to such a marked degree that it was impossible to put it on the foot. This erroneous sizing is not in keeping with basic knitting principles, and with the returning demand for quality it will be outlawed.

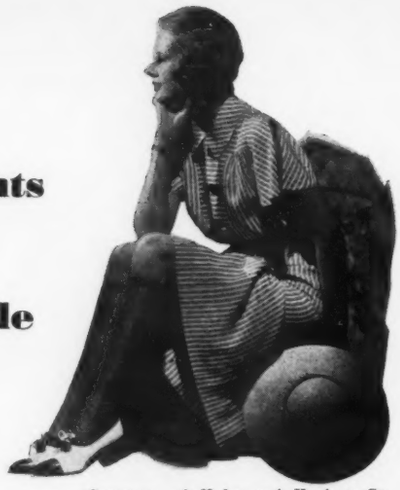
In men's half hose a movement back to pure silk and high-grade lisle is apparent. For years American manufacturers have attempted to approximate the French and German lisles, and today the domestic market offers fine mercerized lisles in gassed and shadow lisle effects which unquestionably hold their own with imported yarns.

This adding to, rather than taking out of the content of better grade half hose, can have but one result—quality merchandise that will be easily recognized as such. Manufacturers are finding the importance of finer needle knitting such an integral part of this quality build-up that they are re-equipping obsolete-needle machinery with the finer knitting set-ups. No doubt in a short time the old coarse-gage equipment will be relegated to the knitting of wools and heavy work socks, as it rightly should be. The reconstruction period through which we are passing offers the half-hose industry a fine opportunity to regain a quality standard which, unfortunately, has been partially lost. Let us reasonably say that this movement back to quality merchandise cannot fail, because the principles are entirely sound and basic.

Knee Length . . .

Among recent developments engaging attention of full-fashioned hosiery trade

By M. C. Miller, M.E.
Manville, R. I.



Courtesy of Holeproof Hosiery Co.

◆ *In this article Mr. Miller discusses knee-length stockings, progress in single-unit knitting, mechanical turning of welts, anti-run hosiery, and some lessons experience has taught in the knitting of three-carrier hosiery.*

THERE have been a considerable number of machine and fabric innovations developed for the full-fashioned hosiery industry during the last year. The one which has recently aroused the greatest interest is the so-called knee-length hosiery. This new women's hose is an evolution of the men's long full-fashioned hose which has been produced for several years by a number of mills, including particularly the Aberle group. This type of men's hose ends below the knee, above the calf, and is fitted with an elastic ring garter at the upper end, connected to the hose in various ways.

The most common type of the women's knee-length stockings, and the one which the Aberles have licensed some of the leading mills to use, has the elastic ring garter integrally knitted with the initial course of the stocking. A special elastic garter material has been developed (U. S. patent 1,860,272 to H. C. Aberle), and there has also been evolved a special stretcher or grabber for holding the elastic after one edge has been transferred to the needles. The latter device keeps the elastic stretched to the proper width, so that the subsequent knitting of the stocking can take place with the regular fabric take-up means, which is manually attached to the grabber.

Other methods of forming elastic tops for this type of hosiery have been evolved during the last year, although attempts to form the elastic bands directly on the needles of full-fashioned knitting machines have, generally speaking, been abandoned. The reason lies in the fact that mechanism has not been evolved, applicable to full-fashioned hosiery machines, with which rubber threads can be properly fed to the needles and formed into loops directly by them.

It would appear as though considerable public demand would develop for women's knee-length stockings, particularly for lounging or for summer use, although it is questionable whether milady will use them for dress or evening wear. A desirable feature from the standpoint of wear is the absence of knitted fabric over the knee, as it is at this point that much of the wear in women's hosiery and the resultant drop stitches develop. There is a more or less constant friction of the skirts tending to make the fabric thinner at the knee and more liable to break when the knee is bent. It is also desirable to hold down the girdle or other foundation garment by attaching the garters of the girdle to the top of the stocking, whereas with knee-length stockings this cannot be done. An advantage of having ring garters below the knee is their tendency to hold the seam of the stocking central with the back of the leg. The elastic material should be of a type which lends itself to washing, although the life of hosiery, compared with other garments, is very short in any case.

Foot-and-Leg Hosiery

The idea of producing the foot and leg on the same machine has by no means been abandoned. The German builder who produced the first practical machine of this type a number of years ago has in the last year made a number of improvements which commend it more than before. The general use of this or similar machines, however, will necessarily develop very slowly, as completely new machinery is required—that is, the additional equipment cannot be added to existing machines. Further, there are many manual movements still necessary, some of which tax the average knitter severely; but the complete stockings that can be produced are in every sense comparable with those made on two machines.

Another German machine builder expected to have the first of a new type of foot-and-leg machine in this country by this time, but for various reasons it has not as yet been shown here. Generally stated, this latest machine knits the leg and foot in a continuous operation, without the heel tabs. A special multiple-section heeling machine, to which the leg and foot blanks are later transferred, is used to form the heel tabs. This method of knitting lessens the stopping time of the costly machines that produce the legs and feet, makes skillful manipulations of the machine by the operator less necessary, and increases the speed with which the heels are produced, which with present-day equipment is relatively slow.

Mechanically Formed Welts

Considerable interest has been shown in machinery to lessen, to some degree, the present skill required to set up and turn welts and to lessen the machine down-time now incidental to hand-turning.

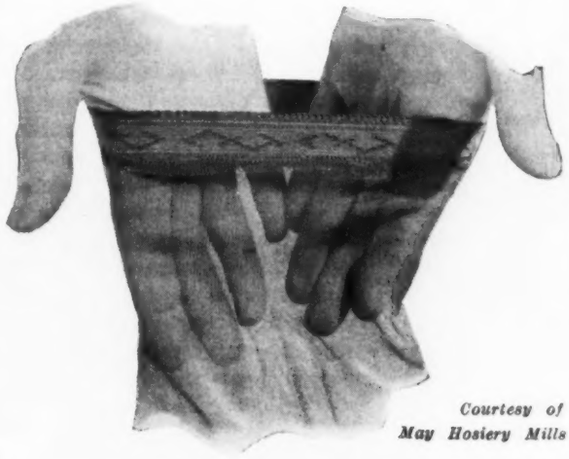
A device of this type is now available for one make of Cotton machine. A welt rake equipped with latch needles is engaged manually by the operator with the initial course, and the welt fabric is set up and knit in a manner about as at present. The new feature consists in pro-

vision for laying the rakes, prior to the turning of the welts, in specially prepared holders provided on the narrowing machine. After the bars have all been laid in their holders, the machine is rotated through a narrowing movement which transfers the loops from the welt hook to the needles, after which the operator removes the welt bars so that they will be out of the way for subsequent narrowing and picot operations. Just how much this device is going to save in commercial use remains to be seen, but present indications are that it will save only a small portion of the total down-time. Further, the introduction of latch needles with their swinging latches between the elements of a fine-gage, Cotton-type machine is of course not desirable. The elimination of skilled manual operations is desirable.

A semi-automatic welt device has also been applied to the single-section, flat hosiery machine. This, in some respects, is comparable to the device just described, but it has the added desirable feature of using welt hooks not equipped with swinging latches.

Anti-Run Hosiery

The production of various types of loop-stretched and transferred, drop-stitchless hosiery has dropped off to a point where the sale is very small. This is probably due to the consumer's determination not to purchase hosiery with a loop structure that differs in appearance from regular fabric and also to the imperfect types of such fabric that have been offered. The interest in a real drop-stitchless fabric, which more nearly resembles plain fabric, still exists, as is evidenced by the report that one of the government departments is energetically working to attain this end, probably by a conditioning of the fabric after knitting.



Courtesy of May Hosiery Mills

As far as the knitting industry is concerned, most efforts are now being directed to the use of warp fabrics or a combination of warp and regular loop structures. With respect to the first method, it must be remembered that a plain warp fabric does not have true anti-run characteristics. A milanese fabric does, but its use for hosiery is objectionable because of its inherent tendency to stretch two ways and because diagonal variations in knitting result from the variations in yarn size and tension. Also, of course, milanese is knitted of two separate yarns, which must be very thin to effect translucency.

Combination warp and filling fabrics can be knitted essentially run-proof; but again we have the increased cost brought about by the use of two threads instead of one and the objectionable vertical streaks incidental to the varied size and tension of the vertical warp threads, of which there is one for each one or two wales of the fabric. There is also the objectionable decrease in strength and wear resistance of these finer yarns and objectionable complications incidental to applying devices to Cotton-type machines capable of feeding warp threads to the needles. Further complications result from the devices necessary for holding and cutting off the threads that are not in use, for holding them finally when the stockings are finished, and for introducing them to the needles of the new set.

We must also remember that warp, combination warp and filling, or milanese fabric cannot be topped or looped and welts cannot be turned and integrally knitted with the body fabric. Therefore, such hosiery must necessarily be constructed differently from hosiery now produced on regular Cotton machines. All of these factors, however, should not preclude further development in this direction, as the major improvement that should be introduced into knitting machinery is the ability to produce run-proof fabric.

Three-Carrier Knitting

The license offer made the industry by the owners of the United States patent now issued to Kaufman has not met with general acceptance. While the license fee per dozen does not appear to be excessive, other costs incidental to producing so-called ringless hosiery with three carriers so increase the price of the finished article that the manufacturers have questioned whether they can afford to pay the amount asked. The question is the more serious because the public has not as yet been educated to differentiate between hosiery produced with the three-carrier system and that produced without it. Nor has a uniform trade-mark guarantee been evolved by the licensor.

Experience has shown that certain changes and improvements in mill methods are essential when the three-carrier method of feeding is adopted. The first of these is a reduction in cone sizes proportional to the increased length of time required to use up any given amount of silk, as compared with the single-thread method. Each of the three cones should be wound on the same winding spindle, to insure that the winding tension is even.

A defective cone or replacement should require that all three cones be replaced and that all silk cones on the machine be changed prior to the running out of any one cone. All surfaces over which the yarns drag or are tensioned must be absolutely smooth, and the angles of the feeding yarns must be kept as nearly alike as possible, as even a slight difference in the angles of the yarns between cone and carrier will vary the yarn drag. The moistening devices must be so arranged as to permit all three yarns at any one section to receive the same amount of moisture and tension; an aid in this direction is to feed all three yarns through the same moistening device and/or under or over the same wick. The cooperating relationship between knitting elements and the accuracy of their adjustment are likewise of greater importance than normally.

Not the Last Word

The writer personally feels that the use of the three-carrier system has been of tremendous value in promoting even-appearing fabric. Whether it is the last word in this direction is questionable; but as the situation stands today, all mills—whether they like it or not—will eventually be forced to produce their quality product by the three-carrier method, unless an entirely different method of evening the translucency of the hosiery fabric is evolved.

Smart tailoring in rayon suit —Anathan

Removable skirt a feature— Ocean

Lastex lace bathing-suit —Schnurer

At last, a knit evening dress! —Cohen Bros.

Aggressive effort by knitters brings

New Life to Outerwear

WHATEVER progress toward recovery may have been made so far by the textile industry as a whole, there can be no longer any question of the revival that is taking place in the knitted outerwear division. It would seem truly that this branch is a favored child of the New Deal. Since early 1934 knitted outerwear has moved forward with a vigor and celerity second to none in textiles. That the time was ripe—even overripe—for a revitalization of this knit goods division, goes without saying. Both as regards return on investment and the trade situation generally, conditions in outerwear during late years have left much to be desired. Indeed, some cynics insist that the present improvement emphasizes, not so much that the industry has now reached any very high plane, but more that it was at such a low level previously.

Be that as it may, the fact remains that the knitted outerwear branch is now enjoying a degree of prosperity which its elder brothers in textiles might well envy. This improvement is a good deal more than sporadic flurries in a few sub-divisions. Fundamentally, it has its roots in a new optimism with which the key companies in the trade have become imbued. Chief among the causes for this optimism are: increased cooperation resulting in a lessening of cut-throat competition; important technical improvement in yarn and apparel manufacture; sounder management methods; distinctive and original styling; and aggressive development of new markets.

It was inevitable that such basic improvements should have had a favorable effect on the industry as a whole. And the list of benefits that have resulted is encouraging. These benefits include: stronger market position; steadier prices; improved consumer acceptance; increased profits as reflected both in financial reports and in bonuses to workers; and a tendency toward manufacturing to order.

Which is not to say that outerwear suddenly has become a white-haired boy of textiles. There are still plenty of flaws in the picture. Style piracy has not yet been eliminated and cheapening of product remains a problem; to cite only two difficulties. However, leading firms proved very definitely during 1934 that enlightened business conduct helps profits, and their example is exerting a favorable influence on the mills generally.

The predictions that 1935 would be a year of notable accomplishment in outerwear appear to be warranted, when we examine the situation closely. Behind the whole new trend is an evident determination of knitters to break with tradition and hit out in new directions. Outerwear today refuses to be limited any longer by the market barriers that have long confined it. As an example of this trend, we have the new cocktail dress, a semi-formal garment which has excited much fashion attention. This effort by knitters to invade the formal evening gown field is very significant. Granting that it presents many technical and promotional problems which must be solved before any great progress is made, the

boldness and initiative of the firms offering this new line is certainly commendable. And the innovation merits close watch.

Outerwear's new vitality has given life to many lines that either had waned in importance or had disappeared altogether. What has happened to knitted neckwear in the last year is typical. Eighteen months ago, this field was dormant. However, last summer proved a turning point; original styling and carefully planned promotion carried knitted neckties into the foreground during the outdoor season of 1934 and their popularity has been increasing ever since. Other market trends of importance are: the dish-rag polo shirt which seems assured of a big summer (as we write, knitters of this line have just announced a price advance), knitted silk mufflers that promise well for the coming winter season, and the whole field of women's knitted sportswear where already the warm weather demand is making itself felt quite spiritedly.

Improvement in manufacture both of the knitting yarns and the knitted merchandise has been an important factor in the renaissance of outerwear. Where a few years ago yarns used by knitters were standardized and uninteresting, today they are much more varied and greatly facilitate the stylist's task. Boucle, ratine and a new rayon yarn known as "frill" have helped notably in freshening and rejuvenating outerwear styles. Then, too, technicians have improved knitting methods resulting in more satisfactory dress fabrics. The long-mooted problem of sagging becomes more acute now due to the effort to drape knitted dresses for formal wear. Sagging, while not eliminated, certainly has been much modified, in recent years.

The present flair among masculine consumers for knitted neckwear is a direct tribute to the styling ingenuity of the mill. Knitted neckwear of 1935 is smart and distinctive. Current trends are toward the boucle and heather effects. What will happen finally to the rabbits' hair neckwear boom that started last year is a matter of conjecture. This merchandise is still popular but there are some signs that it may wane ere fall. For the manufacturers, the moral of the rabbits' hair neckwear vogue is: keep open-minded on style vagaries. When this type of neckwear first appeared, the whole outerwear trade took it very skeptically. Most factors swore it would fail. Indeed mills that made these ties were passing their product dejectedly to jobbers at any price. Then, all within a few weeks, rabbits' hair neckwear leaped into popularity. At present fiber mixtures are the highlights in neckwear, interest centering on the multicolor effects and on plaids. Knitted silk mufflers were carried into a new popularity this season by the general revival of the knitted outerwear, and here too styling has quickened consumer interest.

While many lines have benefited, the major stress of the outerwear revival so far as increased sales are concerned, seems to be in the following: women's sportswear, (especially the blouse, skirt and coat combination), knitted infants' wear, the semi-formal apparel, and the accessories. Men's sweaters have not strengthened their position noticeably, though in late weeks this division has begun to inject new style influence into its lines. Bathing-suits can be said to have held their own satisfactorily, thanks to new interpretations of the sun-suit theme. And, of course, there's the lace bathing-suit which, while only partially knit goods, yet is a helpful factor in stimulating fashion interest in the whole range of bathing-suit lines.

Other lines where good styling has helped are: twin-sets, that interesting double sweater which is now a best-seller; bedroom slippers, millinery, purses, not to speak of such household novelties as knitted covers for cocktail glasses which further illustrate the knitter's ingenuity in developing new markets.

The sum of it all is that knitted outerwear has staged a successful comeback. Even the vogue for home knitting which for a time seemed to offer competition really has done the opposite; it has stimulated a fashion demand which the home knitter could not possibly meet, and here again the result has been to benefit the mill.

Many broad reasons suggest explanations for the outerwear revival —increased outdoor life, better merchandise, less "inferiority complex" among mills—but whatever the key cause may be, the most significant point is that the mills have availed themselves of their opportunity and are rapidly digging themselves out of their depression difficulties by means of aggressive and profitable development work.

Neckties by Art Neckwear; silk muffler by Franklin

Dress by Apolda features ruffled sleeve

Chardonize town hat by Eagle

"Twinster" is 1935 offering of Central

TODAY

Corsets of Today . . .

Analyses of three types, including the slip-on girdle with two-way stretch

By J. B. Lancashire

What the trade still calls "corsets" are today far removed from the steel-ribbed straight-jackets of the late Victorian era. The latter might have been a creditable product if you had to limit your source of material to canvas plants and steel rolling mills. The present plastic garment, knit of yarn and rubber, performs its service painlessly and noiselessly.

YESTERDAY

ONE of the most common uses of knitted fabrics incorporating rubber threads is for corsets, including the modern slip-on girdle variety. Details are given here of three typical corset textures, illustrated in Figs. 1, 3, and 5. Fig. 1 shows a shaped piece of tubular fabric suitable for a slip-on or, as it is sometimes called, "roll-on" or "step-in" or "pull-on" girdle. It possesses two-way stretch, an attribute which greatly enhances its market value. Two-way stretch is obtained in this instance by introducing rubber in the form of straight or "laid-in" filling threads and also as knitted loops. The rubber threads that are knitted-in combine with the straight laid-in yarns to provide the desired amount of lateral elasticity, and they also serve to make the fabric moderately elastic in a longitudinal direction, thus permitting greater freedom of movement on the part of the wearer.

A loop drawing of the structure of the fabric is given in Fig. 2. The drawing is of the face side of the fabric extended laterally. Two sets of needles are employed, and these are arranged as follows:

Vertical lines denote needles in action; and dots, needles out of action. The set having every third needle out of action knits the face side of the fabric. Each course is knitted from two separate yarns which are fed to the needles together. After every sixth course, where abnormally long stitches are formed, a straight rubber thread is inserted between the face and back loops. This thread is imprisoned between the two sets of needles until the knitting of the next circuit of stitches binds it in. The first, third, fifth, and sixth courses of the knitting cycle, which extends over six courses altogether, are produced from rayon and mercerized cotton; and the second and fourth courses, from rayon and Lastex. In the loop drawing, courses knitted from rayon and cotton are represented by continuous lines; and those knitted from rayon and Lastex, by broken lines. The straight thread, shown in black, has a core of round rubber (lactron) covered with a double layer of cotton yarn. It is substantially thicker than the Lastex and other looped yarns.

Narrowing at waist is effected by gradually increasing the tension on the straight thread as knitting proceeds. Furnishing wheels, driven by means of cones along which a belt is moved to vary rate of feed, supply the thread under controlled conditions. The lower the rate of feed, the more the rubber is elongated at the time of laying it in, and hence the greater its contraction afterwards. Thus shaping is done without decreasing the number of knitting needles or altering the character of the stitch. The fabric was produced on a 6-feed 12-needle circular latch-needle rib machine with Lindley differential laying-in attachment.

Fig. 3 illustrates a fabric which finds use as insertion in boned corsets. The structure of the fabric, which may be defined as shot half cardigan or royal rib with laid-in yarns is shown in Fig. 4. Two complete sets of needles are used, and the cycle of knitting movements covers two feeds. At the first feed the back set of needles tucks and the front set knits. Before the second feed, where both sets knit, is reached, the straight thread of covered rubber, shown in black, is introduced between the two sets of needles. The yarn supplied at the first feed is rayon; and that at the second feed is cotton. Owing to distortion resulting from the use of the tuck stitch, the rayon face loops are very full and round and almost completely cover the constricted cotton loops. This fabric can be made on either latch-needle rib circular machines or two-bed flat machines, but most economically on the former type, as production is higher and there are no selvages to cause knitting trouble. To serve the purpose for which it is intended, the fabric has to be cut to shape and subsequently sewn to the woven parts of the corset. It is impossible to guarantee

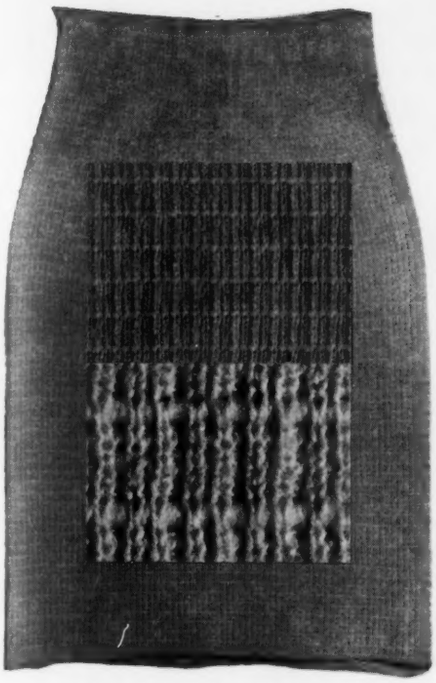


Fig. 1—Shaped tube for the slip-on, pull-on, roll-on, or step-in girdle, with true size and magnified sections

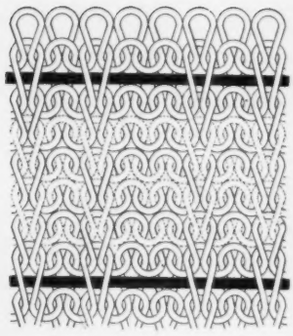
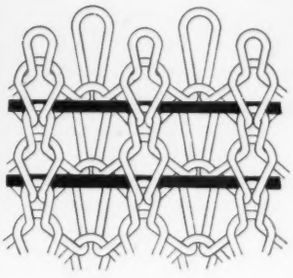


Fig. 2—Face side of fabric in Fig. 1 extended laterally



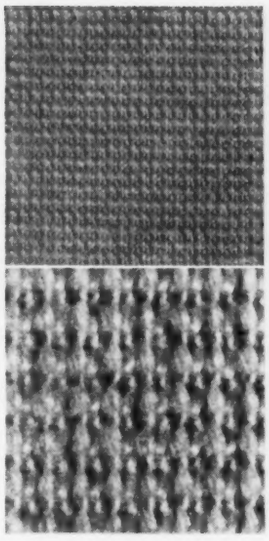


Fig. 3—Half-cardigan fabric for inserts in boned corsets

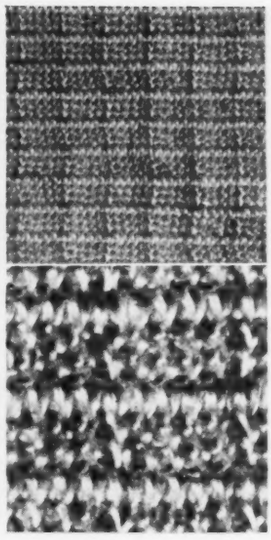


Fig. 5—Straight rubber thread laid in every sixth feed

Fig. 4 at left—Construction of fabric shown in Fig 3

that the straight laid-in yarns are firmly secured where seaming takes place; and the fabric may lose its elastic property after a short time because of a tendency of the unsecured rubber threads to creep inwards, especially if they have been introduced under strong tension. An effort is now being made to obviate this risk by adopting the Walton method of knitting, which locks the straight thread in every stitch through causing the needle hooks to penetrate the rubber covering.

Such a close formation of straight rubber threads as occurs in the sample just described is likely to cause the fabric to exert too much pressure for comfort in a slip-on girdle, unless much finer threads are used. It is preferred for economical reasons, however, to use the same thickness of rubber but to introduce it more or less frequently in accordance with particular requirements.

Fig. 5 illustrates a fabric of the same looped structure and made from the same kinds of yarn as Fig. 3; but in this the straight rubber thread is introduced at one feed in six, instead of at every second feed. This fabric, which is designed expressly for slip-on girdles, is made on a six-feed circular rib machine. Every sixth cylinder trick is left empty to enhance the stitch effect. The fabric stretches in a lateral direction only, since no rubber yarn is actually knitted in. Although in no way inferior in appearance, it produces a somewhat cheaper and less satisfactory garment than the sample possessing two-way stretch (Fig. 1).

Tights For Men

New abbreviated shorts take market by storm

AFTER some years of conservative styling, the usually sedate men's underwear industry finds itself all het up this month over a radical departure which promises to have far-reaching results. The excitement centers about a new type of knitted drawers which are abbreviated to the similitude of tights, making the wearer look not unlike the daring young man on the flying trapeze. Pioneers in the style were Robt. Reis & Co., with "Scandals," and Cooper's, Inc., with "Jockey Shorts." "Jockeys" are shown in the accompanying illustration. Both companies found this new garment an instantaneous success with demand exceeding supply.

A few days later other mills were offering substantially similar shorts, and by the beginning of April the vogue had swept through a considerable part of the men's underwear industry. Consumer demand reached amazing proportions, if we are to believe the claims of protagonists; 400 doz. were cleared by a New York haberdashery chain the first day, and since then sales in leading cities have risen steadily. The line retails at from 35c. for cotton garments, to 50c. for mixtures and $1.00 for all-rayons. The success of the innovation puzzles the more conservative trade leaders and they are wondering whether it may not be just a passing fad. However, it is felt that if the vogue serves to stimulate styling of men's underwear, which has long been stodgy, it will have done everyone a good turn.

Chances of damaging goods lessened by simplified routine for

Finishing Jersey Cloth

By Z. J. Chagnon and H. P. Galloway

EVERY finisher of woolen jersey cloths has his own ideas as to the proper procedure for handling this type of material. Some finishers get good results; others run into all kinds of difficulties. No attempt will be made in this article to discuss all the various processes which are used by jersey finishers. Instead, the authors will outline briefly the methods followed by a mill which has consistently produced good jerseys, and consequently has enjoyed a long run on this type of cloth. No claim is made that the procedure to be described is the only correct one, but it is believed that it will suggest to many finishers ways in which they can improve on their present methods.

In order to permit comparative calculations of the speeds and outputs of the various machines mentioned, we shall refer throughout the article to the handling of a fabric which is to weigh 7 to 7½ oz. per yard in the finished state, the pieces to be 70 to 75 yd. long. Some modification of this procedure will be necessary, of course, when cloths of other weights are being processed. The material, as it is taken from the knitting machines, is tubular in form and measures from 27 to 27½ in. in width. It contains some oil and dirt, collected during knitting. Depending on the handle desired, the first finishing operation is either fulling or scouring. If a crisp, open handle is preferred, the cloth may proceed directly to the washer. Although the fulling mills used for jersey cloth are the same as those for other fabrics, their operation is different. Three factors are involved in fulling: friction, heat, and moisture. In the case of jerseys, moisture is the most important of these factors. To avoid felting, which is undesirable on jersey cloths, water alone is used in fulling. The watering of the fabric is carried out very carefully in order to insure the even wetting out which is essential to uniform fulling. The plant in question has found that a suitable way to do this is to have a bucket or trough with holes drilled in the bottom erected over the fulling mill. The water is poured into this receptacle as the piece of cloth begins to rotate in the mill. Only sufficient water thoroughly to moisten each piece is used. The moisture content of the goods can be tested by twisting a bit of the cloth in the hand. If the piece is properly moistened, a small amount of water will be squeezed out. Too much water should be avoided, as it will give rise to roller slippage, and thus harm the fabric. The correct amount of water for this weight of cloth will approximate 12 to 15 quarts to one piece.

In the finishing of jerseys it is necessary that all shrinkage during the fulling operation be in length, and none in width. Therefore there should be little or no pressure on the springs of the rollers, as this would tend to introduce width shrinkage. Weights on the trap box, controlling shrinkage in length, must be regulated to bring the piece up in length to the proper weight. During the fulling operation the cloth must be watched closely to make sure that the shrinkage does not proceed too rapidly or to too great an extent.

Shrinkage is checked as often as is necessary by measuring the loss of length in 1 yd. of the cloth which was marked, by means of strings, before it was entered into the mill. The time required for the fulling should approximate 20 min. The usual run of jersey is four pieces to a double mill, two on each side, sewed end to end.

After fulling, or immediately upon being received in the finishing department if no fulling is required, the pieces are thoroughly scoured. The machine used for scouring jerseys is the ordinary rope form of washer. Eight to twelve pieces, in sets of two, sewed end to end, are fed into the machine, making four to six "ropes" of cloth. The fabric is caused to circulate continuously by means of a pair of rollers placed over the tub. As much scouring liquor as the cloth will take up is entered, and the machine is then filled with warm water. The rollers now perform the added function of "biting" the suds out of the cloth. These suds and the dirt which they contain are carried off through a small trough placed directly below the rollers. When the scouring has proceeded to a point where the suds are no longer very dirty, the outlet of this trough is closed and the suds are allowed to run over the edges and back into the tub. After the goods are thoroughly cleansed, the scouring liquor is drawn off and the fabric is rinsed, first in warm and then in cold water.

The scouring liquor may be composed of a good low-titre soap, with the addition of soda ash or pearl ash. In this connection, it should be remembered that the lighter the liquor, consistent with good results, the better. The approximate length of time required to scour goods of the type under consideration is 30 to 40 min.

Scouring completed, the fabric proceeds to the dye-house. Of the various methods employed for dyeing jersey cloth, that used most frequently is the acid-dyeing process. If properly carried out, this method has little harmful effect on the brilliancy, strength, or handle of the fabric. Six to twelve pieces, sewed as before in sets of two, end to end, are circulated continuously through the dye liquor for 2 to 2½ hr., depending on the rate and temperature of exhaustion of the dye being used, the depth of color required, and the ease with which the proper shade is achieved. To insure level dyeing, the dyes are carefully selected, and the temperature of the bath is watched closely. About 10% of glauber salt and 3% of sulphuric acid, or 3 to 4% of formic acid, are employed to promote level dyeing and exhaustion of the bath, these percentages being varied somewhat with different dyes and depths of shades.

Reducing actual processing time lessens chances of damaging jersey cloth while in process and speeds deliveries

When the desired shade has been obtained, the goods are given a short cold-water rinse, removed from the machine, and hydro-extracted to remove excess water. Care must be exercised in placing the cloth in the extractor, since this machine throws the water off by centrifugal force and must be evenly packed if it is to remain in balance. About twelve pieces of cloth can be accommodated in a machine having a drum diameter of 60 in. Extraction requires from 5 to 10 min.

In recent years drying methods and equipment for tubular fabrics have been greatly improved, and today there are available a number of systems which are suitable for handling jerseys. In the mill mentioned above, the following method is used: Cut in the drying room floor is a circular hole 18 in. in diameter. Protruding about 2 ft. from this hole is a metal tube about 8 in. in diameter. This tube is open at the top, and is connected with hot air blowers at the bottom. About 3 ft. above the tube is a pair of power-driven rollers, so arranged that the cloth can be wound onto tubes after being dried.

Between this winding device and the hot-air tube is placed a wire cage. The bottom part of this cage is in appearance a cone, point down; the mid-sections are cylindrical in shape; and the top part gradually flattens out until it reaches the width at which the cloth is to be finished. The conical bottom opens the cloth out gradually and smoothly; the cylindrical middle allows the hot air to reach all parts of the fabric evenly; and the top part flattens the cloth for rolling and spreads it to the required width. In operation, the damp "tube" of cloth is dropped over the hot-air pipe, the wire cage is attached, and the cloth is drawn up around it. Then the first end of the piece is placed between the winding rolls, the hot air started through the piece, and the winding mechanism put in motion. The average length of time required to dry a piece of cloth is 15 min.

After the cloth has been dried it is examined and, if necessary, mended in the usual way. Each piece is then weighed and measured, and the weight per yard computed. This computation is necessary because, due to the differences in time required for scouring and dyeing the various pieces, some pieces may have come up in weight more than others. If the pieces differ in weight, this condition must be corrected in the calendering operation.

The calender used for jerseys consists essentially of three parts. The first part, the feed or tension rack, is composed of several horizontal V-shaped rods, through which the cloth is inserted to give the proper tension, and a curved-wire piece to spread and hold the fabric to the proper width. The second part, the calender proper, consists of three 1-in. pipes, perforated in a stagger system, by means of which steam is forced through the piece to set the cloth. The third part is a winding device for re-rolling the fabric.

The cloth is passed through the tension rack, pieces which are too heavy being given more tension than those which are nearer the required weight, so that they will be stretched out to the desired 7 to 7½ oz. Cloth which is too light is run over the calender without any tension. After the fabric has been threaded through the feed rack and over the steam pipes, the steam is turned on and the winding mechanism started. The speed of the calendering operation is such that the output is approximately 7 to 8 yd. per minute.

At this point it frequently is necessary to subject the goods to a decating treatment for the purpose of further setting the fabric and imparting a soft finish and luster. The decating machine consists of a pair of rollers, one hollow and perforated so that steam can be forced through it; the other, plain. A long canvas blanket is wound around these rolls, and the fabric to be decated is fed onto the perforated roll between the folds of the blanket. All condensation from previous operations of the machine is cleared away by means of exhaust taps in the perforated roller, and steam is turned into the roller for 3 or 4 min. The steam is then shut off, and the exhaust pump is put into operation for another 3 to 4 min. to draw out all excess moisture. Finally the pieces are unrolled from the blanket and wound onto tubes. The goods are then ready for marking, wrapping, and shipping.

It should be emphasized in conclusion that in working out the routine described the mill has endeavored to make each process as nearly foolproof as is possible. Scouring and dyeing formulas have been simplified. Actual processing time has been reduced to the minimum. This latter not only lessens the chances of damaging the goods while they are in process, but facilitates the quick deliveries demanded today.

By W. H. Hand

Modified single-bath method found suitable for dyeing hosiery with

Sulphon Cyanine Black B

SULPHON Cyanine Black B, although widely employed in the dyeing of silk hosiery, has the reputation of being a bad actor. Hosiery dyers using the one-bath method often find that the bath breaks and the dye does not go on the goods properly. The difficulties encountered with Sulphon Cyanine Black B are due to what is commonly called a "reduction" of the dye itself during the dyeing process. Dyers, naturally, have given much thought to the subject, and several methods have been worked out which enable satisfactory results to be obtained. At a recent meeting of the American Association of Textile Chemists and Colorists, Cook and Schepmoes reported the results of an investigation to determine what factors are responsible for the variations in single-bath dyeing with Sulphon Cyanine Black B and suggested a modified method for use with this dye. This procedure has now been tried out in the dyehouse and has been found to be much more satisfactory than the usual one-bath process.

The ordinary method of dyeing silk hosiery by the single-bath method is, briefly, as follows: Water is entered into the machine, allowing 4 gal. to 1 lb. of goods; the water is heated to 210° F.; the degumming agent added and allowed to mix thoroughly by revolving the machine a few turns. The hosiery is now placed in the machine and run for 5 min.; the dye is entered slowly; and the goods dyed for 20 min. Salt is added; dyeing continued for another 20 min.; and a sample taken to match for shade. The temperature is maintained at 210° F. throughout the process. When the desired shade has been obtained, water is run in the machine to flush the bath; finally the goods are given a rinse with warm water, treated with a suitable finishing agent, and then are removed from the machine.

Consistently good results are not obtained when attempts are made to apply Sulphon Cyanine Black B by this method. At times the bath breaks down, and it is necessary to run off about half of the liquor, bring the solution to the original volume with fresh water and additional degumming agent, reheat the bath, dye for 15 min., add 5% of salt, and continue dyeing for another 5 min. Even when this is done, the goods are likely to be spotted or shaded, and it is necessary to remove them from the machine, extract, remove tangles, re-bag, and redye in a new bath containing about 10% of the original amount of dye, 4% of the original amount of degumming agent, and the same amount of salt as called for by the original formula.

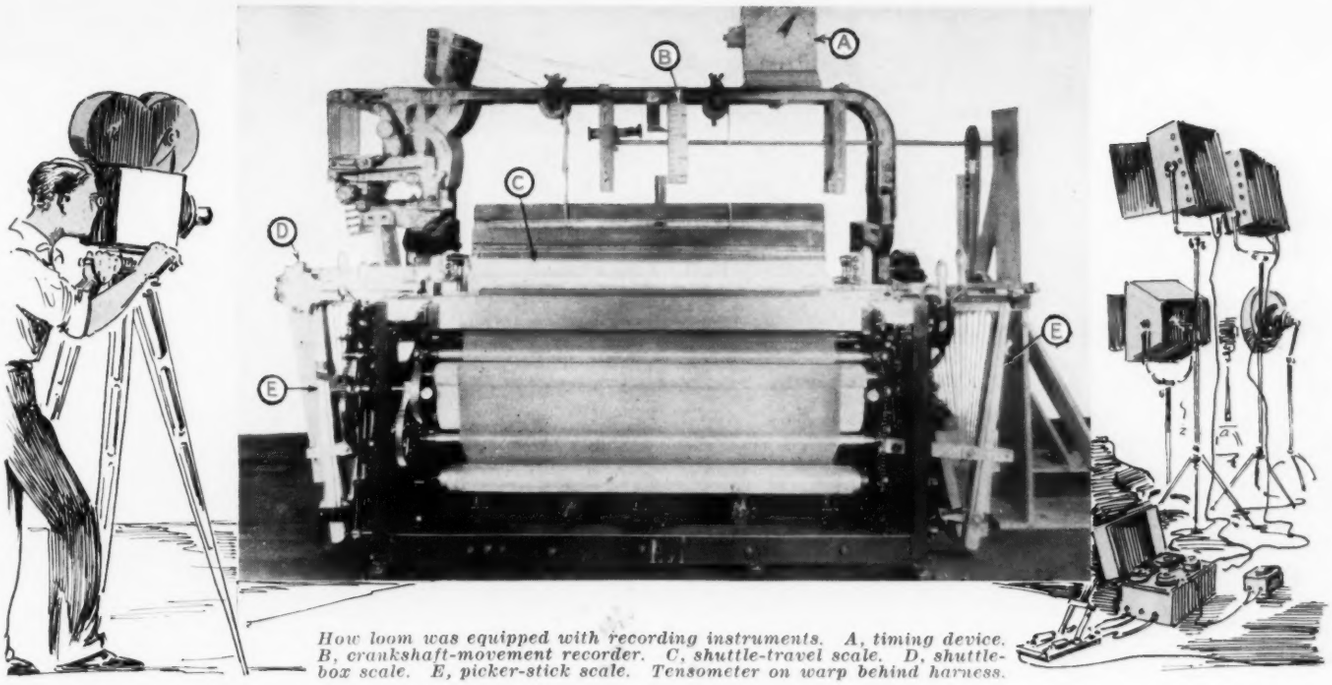
As a result of their studies, the two chemists referred to above concluded that the following three factors are involved in the so-called reduction of Sulphon Cyanine Black B: (1) the serecin from the silk, (2) the pH of the dyebath, and (3) the temperature of the dyebath. At a high temperature and pH there is a reaction between the serecin and the dye which effects the destruction of the latter; this reaction, apparently, is not a true reduction. To avoid this reaction they proposed a modified single-bath method in which degumming is first carried out at a high temperature and dyeing conducted in the same bath after it has been allowed to cool slightly.

As adapted for an actual trial in the dyehouse, the procedure is as follows: The correct volume of water is run into the machine and brought to a boil, the degumming agent is added and allowed to mix thoroughly with the water, and the goods are entered and run for 20 min. at the boil with the lids of the machine closed. The lids of the machine are now opened, and the temperature of the bath is allowed to fall to 205° F. Dye is entered, the goods run for 20 min., salt added, and dyeing continued for 20 min. with the lids still open and the temperature maintained at 205° F. When the desired shade is obtained, the machine is flushed over and the goods are rinsed and finished in the usual way.

This method enables the degumming to be started at a pH of about 10.8 and to be carried out at a high temperature. When the dye is entered, the pH of the bath has dropped to about 9.5. At that alkalinity and at a temperature of 205° F., the reaction between the dye and the serecin apparently is slowed down sufficiently to prevent any serious difficulty in dyeing with Sulphon Cyanine Black B.

Shortly before Cook and Schepmoes reported the results of their investigation, Daniel (*Cotton,* October, 1934) described a modified single-bath method which is somewhat different from the one just discussed. In this procedure the degumming is carried out for 30 min. at the boil in a solution brought to a pH of 11 by the addition of 1 part of ammonia to 4 parts of the degumming agent; acetic acid is then added to reduce the pH to 9; the dye is entered slowly; and dyeing is carried out still at the boil, but with the lids of the machine opened. This method is said to give level dyeings and to prevent "reduction" of the dye.

From the author's own experience and the reports of others, it now appears evident that the main precaution to be taken in dyeing with Sulphon Cyanine Black B by the one-bath method is to preserve a suitable balance between the alkalinity and the temperature of the dyebath. Further study is necessary, however, before a definite statement can be made as to the best possible method from the standpoint of most satisfactory results at the lowest cost.



How loom was equipped with recording instruments. A, timing device. B, crankshaft-movement recorder. C, shuttle-travel scale. D, shuttle-box scale. E, picker-stick scale. Tensometer on warp behind harness.

"Shooting" the Loom

With slow-motion movie camera discloses faulty settings and design

By Albert Palmer and Floyd A. Ramsdell†*

IN THE early design of looms, rules of thumb resulting from experience were used to determine the relative positions of the picking motion, the shedding mechanism, and the lay. Many attempts were made to check these rules by various mechanical and electrical devices, but none was very satisfactory because of the nature of the loom movements. For this reason Crompton & Knowles Loom Works decided to make slow-motion pictures of a loom in operation, since such motion pictures magnify time so that details of actions invisible at normal speed may be recorded and studied.

To accomplish the desired results, a loom was set up equipped with the following auxiliary apparatus:

1. A time-recording device, placed above the loom, showing the time for any observed occurrence by means of the positions of an arrow revolving at a known rate on a circular disk.

2. A cylinder, graduated in degrees, driven by the crankshaft and showing the position of the shaft at any given instant.

3. A linear scale along the lay to indicate the number of inches traveled by the shuttle.

4. A scale to record the position of the shuttle boxes.

5. Two plain surfaces with radial lines placed behind the picker sticks to determine the straightness of the sticks.

6. A graduated cylinder at the back of the loom showing the position of the crankshaft and a Tensometer to show variations in warp tension.

Although popularly known as "slow motion," the camera which takes "slow motion" pictures is in reality an ultra-speed device which does to motion what the microscope does to minute particles. It enlarges motion so that one may see the details of actions which at normal speed are invisible. It magnifies time, so to speak, and makes a record of the magnified sequences which may be examined again and again without recourse to the subject inspected.

The loom was brilliantly illuminated and the pictures taken at an average speed of 188 frames per second, with an exposure of approximately 1/12,000 sec. for each frame.

The chief value of a film of this kind lies not in running it, but in turning it one frame at a time in a hand projector so that the position of the various parts of the loom and the readings of the various associated instruments can be recorded.

Fig. 1 shows the shuttle immobilized in flight. By

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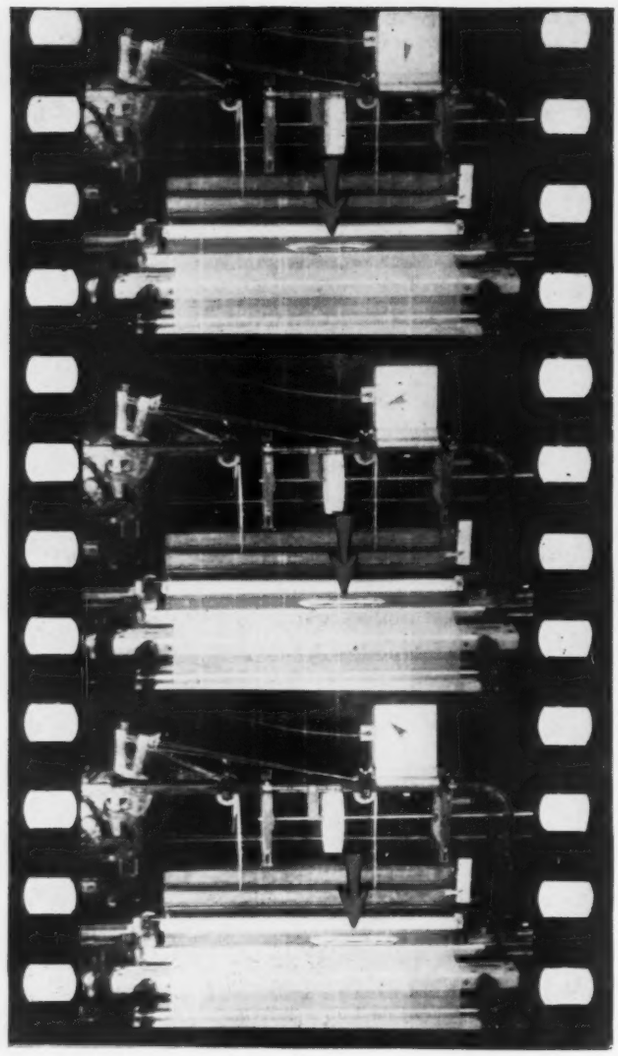


Fig. 1. Shuttle immobilized in course of flight

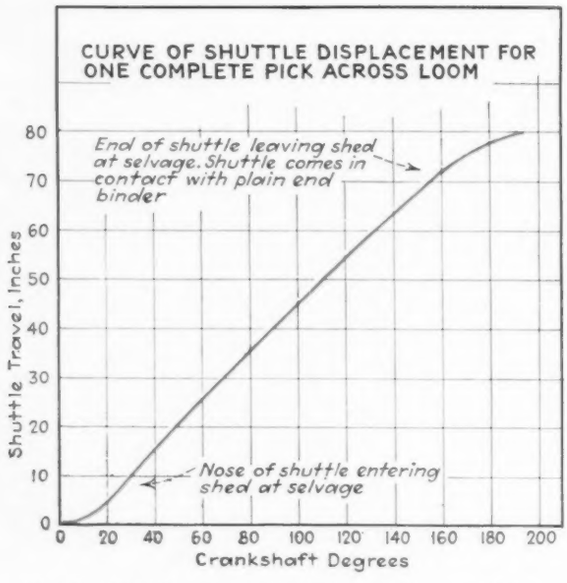


Fig. 2. Shuttle movement plotted against crankshaft degrees

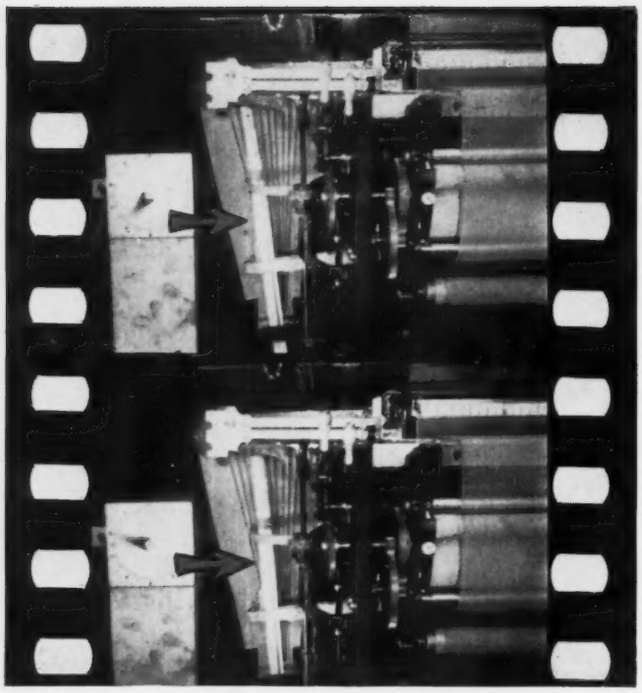


Fig. 3. How picker stick bends at throw

comparing frame *A* with *B* it can be computed that the shuttle moved 2 in. in .00533 sec., or at the rate of 31.2 ft. per sec., or 21.3 m.p.h. From this type of analysis the curve shown in Fig. 2 was made, showing the shuttle travel in inches versus the degrees of crankshaft movement. From this curve and additional data the speed of the shuttle at any point on the lay can be computed. For example, in this case the speed of the shuttle is 38.7 ft. per sec. as the shuttle is entering the selvage from the drop-box side of the loom, 32.3 ft. per sec. half way across, and 25.6 ft. per sec. leaving the opposite side of the selvage. Thus, the velocity of the shuttle leaving one selvage is approximately two-thirds that at which it enters on the opposite side.

New picking cams were developed as a result of these studies. Prior to the taking of the pictures the contour of the cams was computed from the fundamental equations of motion; but after the studies had been made, a number of assumed constants were corrected. Fig. 3 shows the shuttle just as it is being picked out of the box. By comparing the edge of the picker stick with the straight lines on the shield behind it, a perceptible bend in the stick can be seen. This explains why cams developed by straight mathematics do not work. The designer must keep in mind that part of the velocity of the shuttle is derived from the cam itself and the remainder from the resilience of the stick. This is also the reason why most attempts to develop metal picker sticks have not been successful, since the metal sticks have been placed on looms in which the cams have been developed, by experience and trial and error, for wooden sticks.

The curve on Fig. 2 also shows the gradual retardation of the shuttle as it enters the box. The characteristic of a loom that makes such gradual retardation possible is most desirable in weaving, since it minimizes rebounding of the shuttle. Rebounding causes the filling to lose its

Fig. 5. Faulty harness adjustment causes shuttle to plow into shed

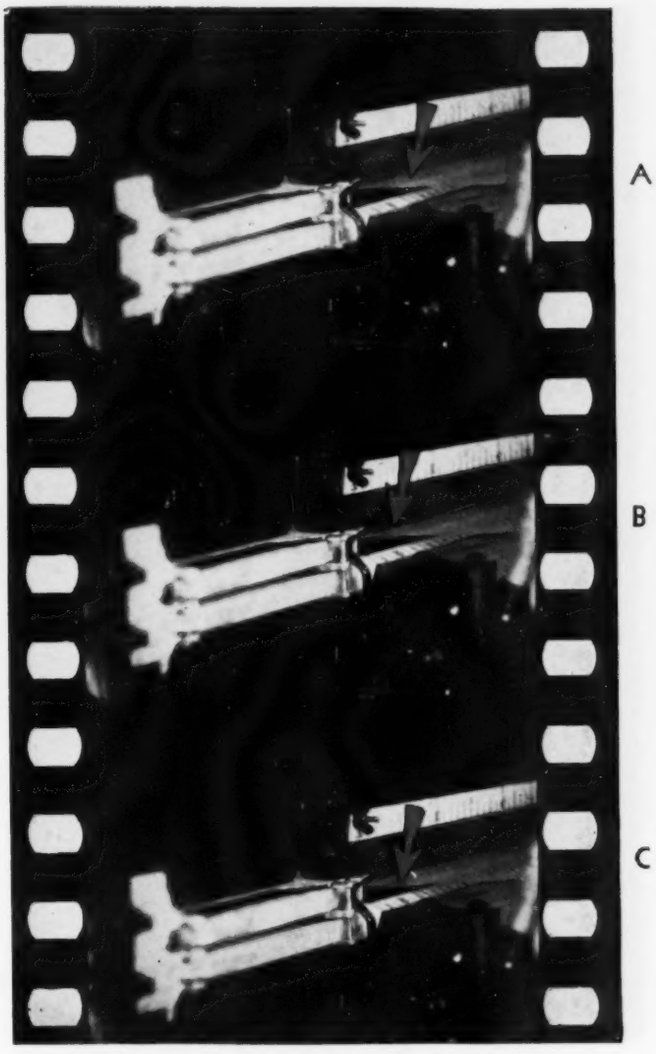


Fig. 7. Fabric rippled at beat-up of lay

tension, with the result that an imperfection may appear or the stop motion may operate.

It is well known that warp breakage tends to be concentrated on the selvages, and Fig. 4 shows the results of studies conducted on automatic gingham and dobby looms. Fig. 5 shows clearly that this condition is largely the result of interference between the shuttle and the warp, especially when the harnesses have not been hung correctly. It will be seen from this picture of the shuttle entering the selvage that the shed has not opened sufficiently and the shuttle is lifting the warp threads. The same condition can occur when the shed starts to close too soon and the threads drag on the shuttle as it leaves the selvage.

The value of slow-motion pictures is illustrated in Fig. 6, which shows a condition that is not evident to the eye when the loom is in operation. It illustrates how the shuttle is raised from the level of the race plate when the bottom part of the shed is not kept close to the race plate. This lifting of the shuttle is either the result of improper hanging of the harnesses by the loomfixer or an improper mechanism to actuate the harnesses. It can be, and has been, corrected by proper instruction on the part of the mills and by improved design on the part of the machinery manufacturer. The picture also shows the value of a suitable shuttle guide to prevent damage to the shuttle as it enters the box under the conditions of adjustment shown. The elimination of chipped shuttles results in a reduction of warp breakage and of damage to the cloth.

Another condition not visible to the naked eye is shown in Fig. 7. Frames *A, B,* and *C* caught the reed of the loom just as the filling was being beaten into place. Immediately in front of the reed a ripple in the cloth is evident, showing that the cloth becomes slack just as the beat-up occurs. As a result, the warp behind the reed is subjected to a definite increase in tension at the beat-up. The truth of this conclusion is shown by the

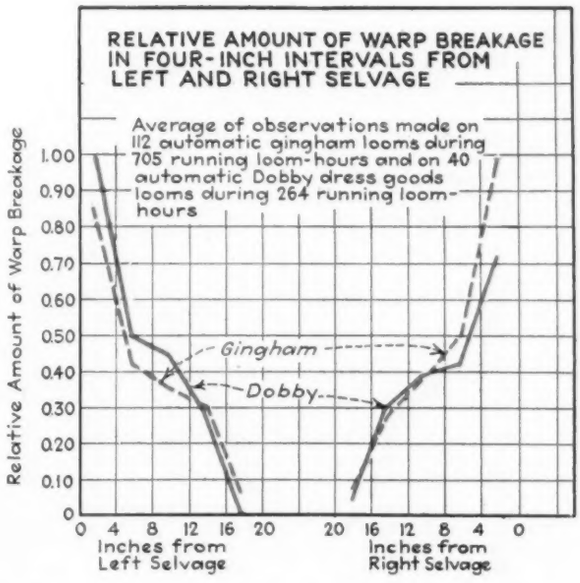


Fig. 4. Distribution of warp breaks from selvage to selvage

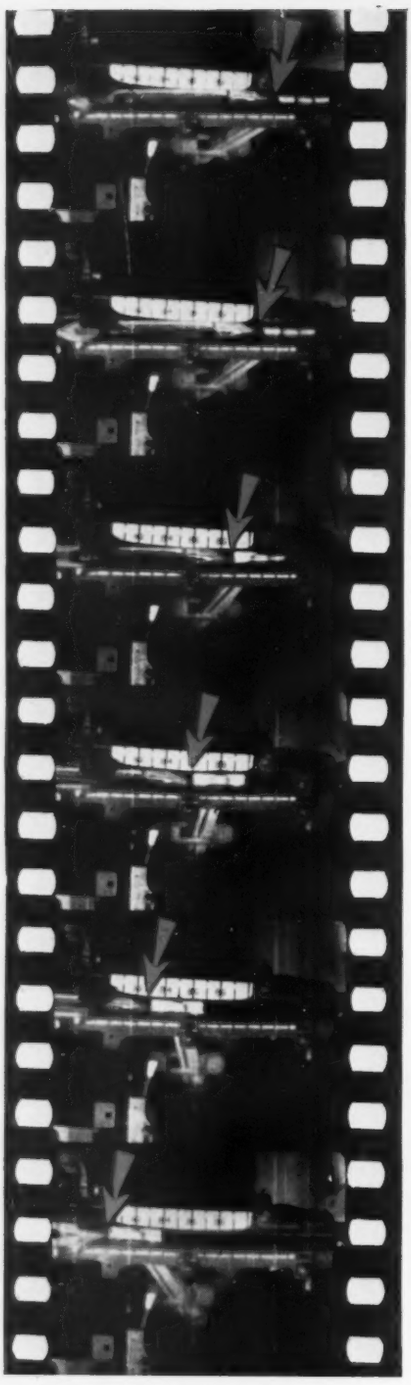


Fig. 9. Shuttle being picked out of shuttle box. These views show that the shuttle stays in contact with the picker for the entire stroke

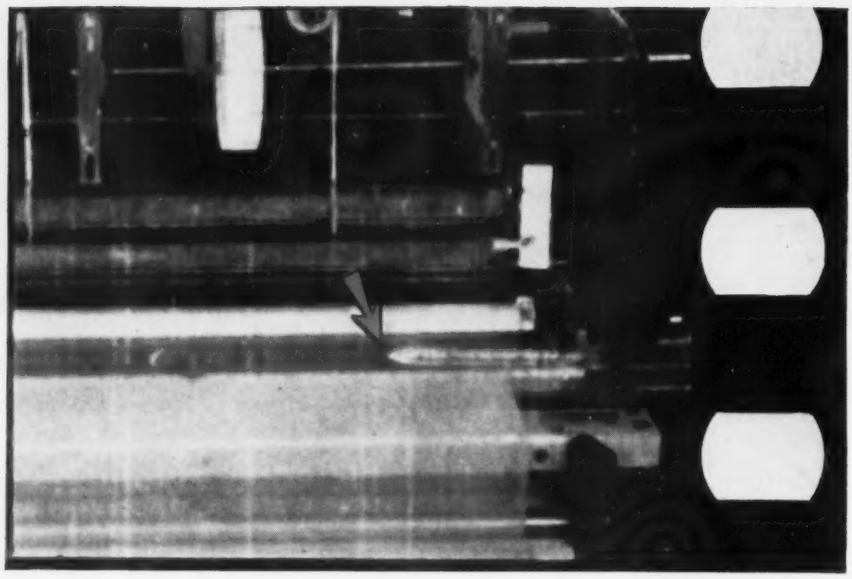


Fig. 6. Rear of shuttle elevated on leaving shed

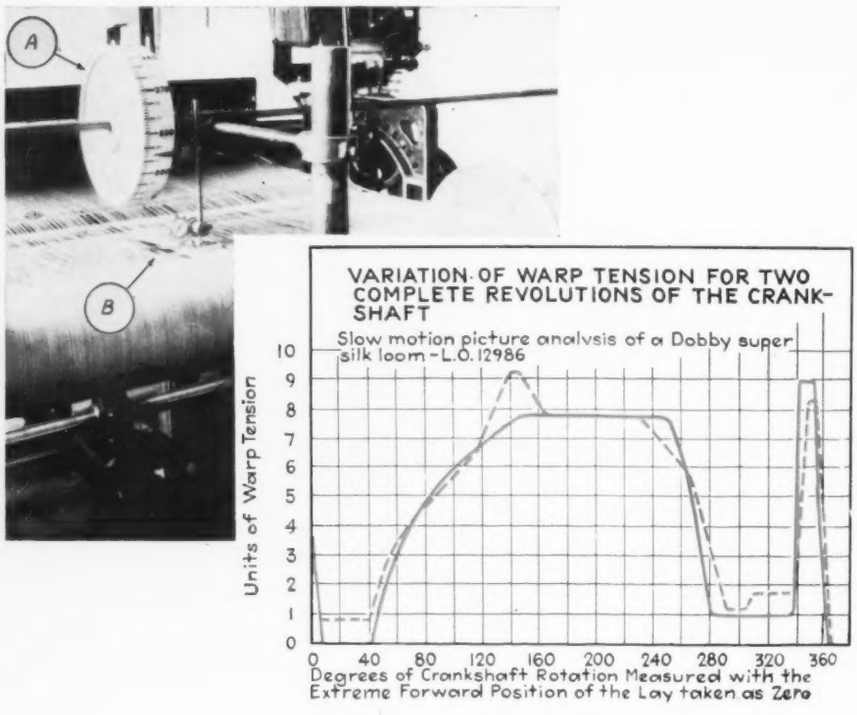


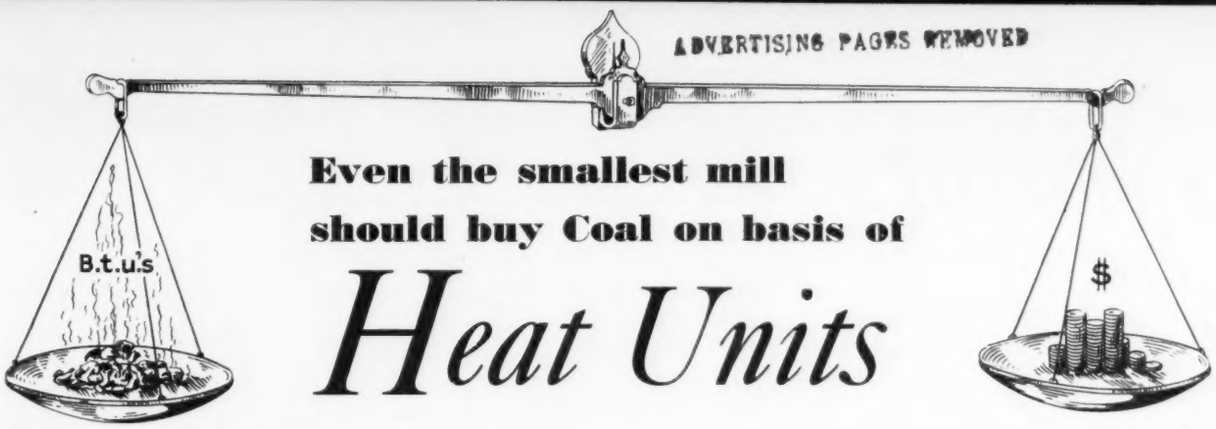
Fig. 8. Variations in warp tension during one revolution of crankshaft; above, apparatus for studying warp tension—A, crankshaft movement recorder; B, Tensometer

curves on Fig. 8—made with the Tensometer on warp threads and the crankshaft indicator previously de--cribed—showing variations in warp tension for two complete revolutions of the crankshaft in units of warp tension plotted against crankshaft degrees. The actual beating-up process begins at about 340° and is completed shortly after 360°. The chart shows tension jumping from one to nine units during the process.

Fig. 8 also discloses the way in which tension increases as the harnesses open and decreases as they close. Just as the harnesses cross, the tension begins to rise, as shown on the chart at the point marked 40°. The tension increases until the crankshaft has rotated to a point 140° from the zero position, remains reasonably constant at eight units of tension to about 250°, and then decreases to one unit.

As far as condition of the warp is concerned, tension when the harnesses are open is much more injurious than at the time of the beat-up. When the harnesses are open the individual warp threads are resting on the narrow edge of the heddle eyes, and the greater the tension the greater the tendency of the yarn to be cut. The pictures were made with the old-fashioned, rope-friction let-off; and, as a result of the studies, an automatic let-off was developed to minimize the variation in warp tension and to let off the warp more uniformly.

ADVERTISING PAGES REMOVED



Even the smallest mill should buy Coal on basis of

Heat Units per Dollar

By N. T. Pef

HOW many of the owners of textile mills realize that with a mere stroke of the pen it is often possible to reduce fuel costs as much as 30%? Yet in many instances this can be done. Particularly is it true in smaller mills, where coal is bought by the ton with no thought as to its heat value. It is necessary only to follow the example of those plants which make it a practice to purchase fuel on the basis of the heat units it contains.

The number of popular misconceptions in regard to coal is surprising. For example, comparatively few people realize that of two carloads of coal that weigh the same and look very much the same, one may be twice as "heavy" in heat as the other. But, in fact, the number of heat units in a pound of coal may vary from 7,500 to 15,000 B.t.u. It is true usually that the higher the heating value, the higher is the price. This does not mean, however, that coal can be bought by the ton, without regard to the heat value, and on the assumption that the price is proportional to the heat units. Although a general relation does exist between the price and heat value, usually this relation is not proportional.

Any buyer of coal can easily determine the relationship between price and heat value in the following manner: If a number of different coals are available in his market, he divides the heating value of each by the price. The result will be the unit price, which will be in terms of heat units per dollar. Now if the price is proportional to the heat value, the result will be the same for all coals. This will seldom be found to be true in any market. For example, in Chicago at the prevailing prices, some coal buyers are getting as many as 8,000,000 heat units per dollar, and others not more than 5,500,000. This means that the first group is getting 40% more heat for the same price.

Take another example where a coal user has the alternative of buying eastern coal with a heating value of 14,500 B.t.u. and selling for $5 a ton, and mid-western coal with a heating value of 11,500 B.t.u. and selling for $4. Which is the better buy? The eastern coal has 29,000,000 B.t.u. per ton, or 5,800,000 B.t.u. per dollar. The mid-western coal has 23,000,000 B.t.u. per ton or 5,750,000 B.t.u. per dollar. Other things being equal, one is just about as good a buy as the other. But other things are not always equal. While the price for a given amount of heat units is the most important consideration, there are other factors which must be taken into account. Among these are: (1) cost of ash removal, (2) effect of molten ash on the furnace refractory, (3) smoke, and (4) efficiency of combustion.

As a general rule, if the unit-price difference is less than 5%, the higher B.t.u. coal is the better buy. This is due to the fact that the higher B.t.u. coal has less ash; therefore the cost of ash removal will be smaller. In addition, the ash of such coal, as a rule, is less destructive to the refractory, and the coal is less likely to smoke. In the example, of the eastern and mid-western coals cited, although both coals offer the same amount of heat per dollar, the eastern coal is a better buy for the reasons just stated, provided both coals are equally suitable for burning with the equipment installed.

It is sometimes believed that the higher B.t.u. coal can be burned with better efficiency than the lower B.t.u., but this is erroneous. Tests made some years ago by U. S. Bureau of Mines proved conclusively that practically the same efficiency can be obtained with a low B.t.u. coal as with a high B.t.u. coal. This does not mean that the same number of pounds of water can be evaporated per pound of coal, but the evaporation is the same per 10,000 B.t.u. of coal.

On the question of smoke, there is little to say. If a coal smokes, and if the smoke regulation is strict in the community in which the plant is located, the coal cannot be used, regardless of other considerations.

The customary way of buying coal on the basis of heat units is to specify in a contract what the heat units are to be and to allow for any variation either through a penalty or a bonus, which is usually paid each month. For instance, the coal might be specified at 14,000 B.t.u. and $5 per ton. If the average actual B.t.u. for the month is 13,000, the purchaser receives a bonus of $[(14{,}000 - 13{,}000) \div 14{,}000] \times \$5 = \$0.36$ per ton. If, on the other hand, the heating value is 14,500 B.t.u., the coal merchant receives a bonus of $[(14{,}500 - 14{,}000) \div 14{,}000] \times \$5 = \$0.18$ per ton.

When coal is bought in this way, the contract should specify the manner of making the heat determinations. In a large plant, having its own laboratory, it is customary to test each carload. In the case of smaller mills, samples ordinarily are sent to a commercial laboratory for testing. In order to keep the cost of testing down to a minimum the usual practice is to take a sample from each car as it is unloaded and place it in an air-tight container; at the end of a week or a month a composite sample is prepared and sent to the commercial laboratory.

If the mill is now buying coal blindly, the chances are that no other single item in boiler-room operation affords as great an opportunity of reducing costs as does the setting up of purchasing methods whereby the fuel will be bought on the basis of its heat value. The taking of samples from each carload of coal is practically no trouble. The expense for analyses is negligible.

Gyrators to Drafts

R. Donald Harvey, chairman, Operating Executives of Ga.

J. C. Edwards, who led spinning discussion

A. D. Elliott, who led carding discussion

Discussed by Georgia Operating Executives

"DUE to the key position that the superintendent occupies in the operation of a textile mill, I should say that the burden of sponsoring a modernization program rests upon him," declared J. M. Shelton, vice president, Robert & Co., Atlanta, in addressing the Textile Operating Executives of Georgia at this group's regular carding and spinning discussion held March 16 at Atlanta. (Abstract of paper, p. 84).

R. Donald Harvey, Pepperell Mfg. Co., Lindale, chairman, presided at the meeting. Before the technical discussions took place, Dr. Lewis Newton, Atlanta pastor, described a recent tour of textile centers in Japan. D. R. Senn was elected to the executive committee.

A. D. Elliott, Trion Co., led the carding discussion, a summary of which follows:

Evener cleaning, more uniform laps, and finer waste with no white or long-staple cotton were said to be advantages of the gyrator-type cleaner. At Aragon Mills, J. C. Platt stated the gyrator cleaner in use produces about the same total waste as the rake-type distributor, that it is 36 to 38 ft. in length, and that an integral part of the cleaner is a sprinkler system.

The square end of a scavenger roll pushed through from the wrong side of a card or rough handling of rolls will straighten out end-clips or fasteners on card flats, according to J. C. Edwards, Martha Mills, Thomaston. He further stated that the type clip which protrudes above the knee of the wire is the most vulnerable to bending, and that bent clips cause improper grinding and subsequent defects in carding. Another member suggested the proper distance from arch to flat is $\frac{3}{16}$ in.

That humidity as high as 75% will damage card-room machinery was the general consensus. Percentages of humidity maintained in card rooms of Georgia mills were reported to be as follows: E. H. Rogers, Fulton Bag & Cotton Mills, Atlanta, 65%; C. K. Cobb, Canton Cotton Mills, averaged 64% on whites during 1934; W. R. Belden, Clark Thread Co., Austell, 60%; Harry Purvis, Chicopee Mfg. Corp., 55%—tried 60%, but found it neither better nor worse; George Glenn, Pepperell Mfg. Co., Lindale, 60 to 65% on whites, 80% on colors since 1929 with no damage to machinery—stripped by air (humidifiers have regular circulating fans in heads); Mr. Jorden, Swift Mfg. Co., 50 to 58% on colors.

Opinion as to relative advantages of one-process drawing as compared with two-process drawing was divided. In most cases, it was agreed that front-roll speed could be reduced one-half to one-third with reference to one-process drawing, but there was considerable doubt as to ultimate improvement in yarn quality. Mr. Asbury reported that since 1925 he has been using one-process with a front-roll speed of 260 r.p.m., as against a previous speed of 425 r.p.m. with two-process. Yarn quality, he reported, is better, as the roving is more uniform. On the other hand, several members reported that single-process drawing results in less-even yarn with a variable breaking strength. H. H. Willis, dean, Clemson College Textile School, mentioned a series of tests sponsored by the Textile Foundation which tends to prove that one-process drawing produces roving more even inch-for-inch, but less even yard-for-yard.

With reference to uniformity of tension on individual ends on drawing frames, it was generally agreed that leather or cork top rolls are better than metallic rolls. Leather rolls, made from a good grade of calfskin, varnished and ungrooved by a faulty traverse, were recommended for use in the manufacture of high-count and quality yarns. Disadvantages of metallic rolls for drawing were asserted to include non-uniformity, sensitivity to weather changes, and abrasive action on fibers. Mr. Purvis stated that at Chicopee the tension-gear set had not been tampered with since installation and that changes in weather did not affect tension noticeably.

J. C. Edwards led the spinning discussion:

Consensus was that the traveling type of overhead cleaner is best for warper creels. Mr. Asbury reported that at Hillside Mills only one traveler cleaner per warper is used, each warper carrying 450 ends.

When front top-roll diameter is decreased, yarn strength is theoretically increased, due to the fact that less surface should give a heavier yarn. Several members reported that such is not always the case and that many other factors play a part in yarn evenness and strength; viz., type of leather or cork buffing, degree of surface wear, condition of staple, etc.

It was agreed that the best way to make a spinning creel shed dirt and trash is to keep it smooth and clean. This is usually done by sandpapering and shellacking.

In answer to a question as to average drafts for long-draft spinning, the following information was offered: Mr. Harvey—on 14s to 23s, double-roving, $\frac{7}{8}$-in. staple, 4.75 twist multiplier, drafts from 13.6 to 18.6; Mr. Elliott—on 20s to 36s, double-roving, $\frac{7}{8}$-in. staple, 4.75 twist multiplier, drafts from 14.4 to 18.3; Mr. Rogers—on 3s to 24s, single-roving, 3.90 twist multiplier on filling, 4.75 twist multiplier on warp, drafts from 6 to 19.

"S" and "Z" Applauded

At Providence meeting of D-13; other standards approved

IN October, 1933, Committee D-13, the textile committee of the American Society for Testing Materials, held a spirited discussion at Providence, R. I., on definitions for the terms "right twist" and "left twist." When the indecisive battle was over, it looked as though the closest approach to peace which could or would be made was likely to be the setting up of separate definitions for different branches of the industry. But at the meeting held last month at Providence, March 14 and 15, applause broke forth when Secretary W. H. Whitcomb announced that returns from the committee's letter ballot were unanimously in favor of the terms "S" and "Z" for designating direction of twist.

This means that the following definition drawn up by the subcommittee on nomenclature and definitions, under the chairmanship of A. L. Brassell, United States Testing Co., will reach the A.S.T.M. tentative-standard status at the June meeting in Detroit: "Twist, Direction of —A yarn or cord has S-twist if, when it is held in a vertical position, the spirals conform in slope to the central portion of the letter 'S,' and Z-twist if the spirals conform in slope to the central portion of the letter 'Z'." Discussion at the meeting brought out that many firms and individuals are already employing the new terms.

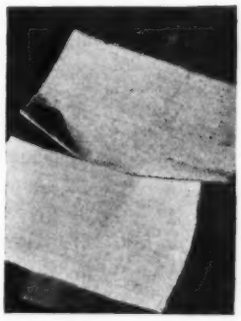
Other important matters to which the letter ballot proved favorable included the recently proposed quality standards for raw cotton, the test for shrinkage in silk and rayon broad goods, the revised test for elongation, and the inclusion of the constant-rate-of-load tester among the approved strength-and-elongation machines.

The committee also voted to submit the following proposed standards or revisions to letter ballot: revision of paragraphs on width and weight in D181-33, Hose Ducks and Belt Ducks; increased scope of D230-27 to include numbered ducks, army ducks, and similar fabrics; insertion of test specifications for atmospheric conditions and time of conditioning in D204-33, Cotton Sewing Threads; a new tentative method for measuring the breaking strength of rayon fabrics when wet; revision of identification and tension specifications in D258-32T, Rayon Yarn; revision of scouring and test-methods sections of D232-34T, Hard Scoured Wool Content of Greasy Wool; revision of fat-content tests and the yarn-numbering system (adopting the Typp system, based on unit of 1000 yd. per pound) in both D403-34T, Woolen Yarns, and D404-34T, Worsted Yarns; and the addition of flat-grip jaw specifications to D76-33, Testing Machines. Tentative standards D376-34T on holland cloth and D316-34T on chafer were voted to be advanced to standard.

Highlights of the progress reports made by the various subcommittees included plans announced for establishing test methods for typewriter and similar ribbons, the near completion of floor-covering specifications, the drawing up of a tentative method for the all-important determination of slippage in silk and rayon broad goods, and the completion of studies on the measurement of fabric thickness.

The decision to include abstracts of the technical papers read at meetings in the annual booklet was made at the general session, which was presided over by Chairman H. J. Ball. Other business included the selection of New York as the place of the Fall meeting, the combining of the cotton-yarn and sewing-thread subcommittees under A. C. Clifford, chairman (following resignations of R. H. Adams and F. S. Cobb), the selection of W. D. Appel as D-13's representative on the Methods of Testing Committee E1 (replacing W. F. Emley, resigned) and of G. E. Hopkins on the new specification-tolerance committee, the combining of certain standards relating to tire fabrics (D122, D316, and D336), and the extending to members of an invitation by Martin Castricum to enter a special D-13 golf tournament during the Detroit meeting.

An interesting comparison between the viewpoints of financial managers and operating executives was made at the banquet on Thursday by W. D. Fales, director of the Rhode Island School of Design, in his preliminary remarks as toastmaster. To a questionnaire on the advisability of textile schools adding a year of study on industrial management, production methods, marketing, selling, and economics, the former group voted 100% no, and the latter group 100% yes. On the question as to whether a graduate of a general-arts course can gain a specialized textile knowledge in one year of experience, the managers voted 75% yes, the production men, 100% no. As to whether undergraduates should alternate work and study, all voted 100% yes.



Specimen prepared for bundle test described to Committee D-13

K. B. Cook, vice president in charge of manufacturing, Manville Jenckes Corp., Manville, R. I., in a paper entitled "Positive Control of Stretch in Cotton and Rayon Yarns During Slashing, and Its Effect on Weaving and Finishing," discussed the new slasher which has been developed at his plant and which was described on page 124 of the March TEXTILE WORLD. The machine is to be placed on the market by Saco-Lowell.

A paper entitled "The Flat Bundle Test for Tensile Strength of Long Fibers," was presented by Guy F. Crowley, consulting engineer, of Providence. He recommended the use of a bundle of combed, parallel fibers measuring 3 in. in length and weighing 3 grains to be laid between two parallel and touching pairs of 1-in.-wide adhesive tapes, as shown in the accompanying photograph. This specimen is placed between flat breaking jaws with the jaws touching. Cross-sectional area is determined by a formula (not offered) which allows for voids, and from the resulting data the tensile strength per unit area is calculated.

A humorous talk by W. C. Worthington, of the Providence *Journal* and son-in-law of D. C. Scott, chairman of the program committee, concluded the evening's activities.

Overseers'

THIS DEPARTMENT

is a feature for overseers which is in effect a combination of our "Overseers' Round-Table" and "Kinks and Wrinkles." It covers, however, a broader field, including as it does useful material which would not have found a place in either. We will feature a superintendent's diary in which readers will find practical hints on various matters taken from actual mill experience. Also included are brief items of value from various sources, correspondence from readers and kinks that have actually solved some problems and may help in meeting yours.

▼

A SUPERINTENDENT'S

(Based on actual mill notes)

AS I NOTED in my last entry, our plant is too small to have an employment officer and we had quite a discussion at one of the overseers' meetings. I objected to having applicants for work wandering in and out of the plant to see the overseers, and the overseers said it would be a bother for them to come running in to the office to see everyone looking for a job. Well, we finally got this settled at the meeting today.

In the future, when anyone applies for a job, one of the girls in the office will take down his or her name, address, experience, etc., on a card, and these cards will be filed by departments. When an overseer wants to hire some help he will look over the cards, pick out those that seem to be the best prospects, and have the girl ask them to come to the mill at a certain time. The overseer can then look the applicants over and pick the ones he wants. Of course, the overseer often knows an old hand he can put back on the job, but this plan takes care of the cases where some new help must be added. In the first place, it saves the overseer's time, particularly when he isn't hiring anyone but thinks he should find out something about those applying, just for future reference. In the second place, job seekers won't be wandering through the plant at all hours. In the third place, as time goes on, such a collection of cards will give a wider choice. As a matter of fact, where an overseer hires a person and then has to let him or her go because of slow business, he can place a rating mark on the card so he will know next time whether the operative was good, bad or indifferent.

Suggest Record of Useful Suggestions

Editor, Overseers' Corner:

A diary is a reminder of the past and should contain improvements made, improvements in the making, and the good points of the personnel. If a man did not profit by his mistakes he would not be retained, so leave out the errors.

Here are some sample entries:

Jan. 3. The overseer of warping had black stripes painted on the center of the bobbins to enable the warper to sight quickly the bobbins that are running out.

Jan. 6. The overseer of winding had a pipe frame placed on top of the skein winders. This gives better distribution of the skeins and they are more quickly handled as they are right in front of the swifts.

Jan. 11. The overseer of weaving is now using two wood screws in lug-strap hold-up. Places it firm against the picker stick, top and bottom, and doubles the service of the hold-up.

The overseers are the superintendent's key men and the way he instructs them is the way he will be pleased. The average overseer is on the alert to improve his department and encourage his help to improve their method of working, and he calls to the attention of the superintendent things that need changing.

Being late at an overseers' meeting has one advantage. It starts informal talk and creates good fellowship. Of course, when the tardy one arrives, pass a joke on him and all will have a good laugh. He will not be late again.

Cleanliness is a daily function. As the superintendent makes daily trips into the plant he should call attention to conditions and it will not be long before he has to speak only occasionally.

NORMAN SIMPSON.

On Punctuality

Editor, Overseers' Corner:

I believe that the average overseer is careless about being punctual with his operatives. He thinks that his time is more important, which probably is true, but he should think in terms of productive equipment and look around and see how much time he causes it to stand idle, and how much time the operative is non-productive. Also, the overseer may give the operative half-way instructions and the operative will have to stop and wait on the overseer for further instruction. When the overseer keeps this up, without ever explaining or apologizing, the operative has a right to think that he can be late also.

Some time ago I had occasion to serve on a safety committee to check over the plant once a week and look for hazards, etc. This committee was to meet a committee of overseers and superintendents and make a report to them. Never once were all of the latter committee at the appointed place on time and never once was an apology made for lateness. Our committee was to serve two months, but before our time was up about half our committee stopped going to the meetings. I think that laxity on the part of the overseers and superintendents caused laxity on our part.

The cloth room is a good place to notice laxity, as there one deals with all the overseers regularly about bad cloth, etc. Often a bad piece requires the attention of various overseers and they are seldom as prompt as they should be to keep the work moving as it should. Overseers should be prompt because they are supposed to be examples for the operatives.

V. T. GLASS.

Editor, Overseers' Corner:

It seems to me that the average overseer does forget quite often to be punctual when dealing with the operatives, particularly in matters of wage rates and repairs.

Along this line of thought I guess all of us will have to take some blame. How often have you and I kidded along a good man and finally lost him by not putting through that small raise that we promised him and then forgot all about? How often have you and I had some defect, apparently trifling at the time, called to our attention and then forgotten the matter until something happens or the operative gets peeved, tries to fix it, and breaks the darn thing? His next step is to pack up his tools, do a lot of harmful talking, and call for his pay.

In my opinion, when taking on new help, a definite wage agreement with the man should be made. A starting rate should be agreed upon, and then, after a definite length of time provided he is satisfactory, his increase in rate goes through without

Overseers' Corner

CONTRIBUTIONS

to the "Overseers' Corner" will be paid for without regard to length. We will be glad to use letters discussing the super's diary or any other pertinent matter whether of mechanical, managerial or just plain human interest. Those who contribute kinks will be paid additional for an appropriate sketch to illustrate their device. It is not necessary to submit finished drawings. If these pages interest you—contribute something to them to interest others.

COMMENTS ON OVERSEERS

By John Williams

While we were on the subject of the overseer having responsibilities in a relatively small plant, such as hiring help, that he wouldn't have in a large plant, I mentioned purchasing. We have no regular purchasing agent, and the way we have been handling this is to have the overseer make out a requisition for what he wants and then have me sign it. This really amounts to having the overseers do their own buying, but I asked a few questions and found out that they really didn't do a very thorough job. Mostly they would send in a requisition for a certain brand of supply item because they thought it was a good product, but it was all pretty vague.

I explained to the overseers that, since they were responsible for the purchase of supplies, they should use more care, and, where at all practical, should keep a performance record on what they had purchased. Such records are invaluable for future reference and eliminate cases where the overseer "guesses" that a certain brand is better than another. A further point I brought out is that terms of payment are important as well as price, particularly where the firm isn't blessed with a lot of capital. I also suggested that the overseers have Mr. Harris, in the office, send for catalogs, etc., of the various concerns selling supplies so the overseers would have such information at hand. Needless to say, any overseer accepting graft from a salesman—and by graft I don't mean an occasional cigar—gets bounced out of this plant in a hurry if I find out about it.

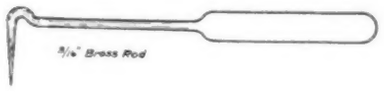
a hitch and without his having to remind the boss several times.

It seems to me a good overseer would set up a tabulation of wage rates for all his help. He should classify them correctly, based upon skill and merit, and then adhere to the tabulation sacredly. In keeping with this thought he would also do well to carry a loose-leaf notebook and make a memo of all needed repairs and go through it daily. MURPHY.

KINKS

Spinning-Roll Cleaner

Although many gadgets have been devised to clean spinning-frame rolls, no device has been made that really takes the place of human fingers. However, an aid to the spinner's fingers is shown in the sketch. Too often the spinners come into possession of steel hooks that are a menace not only to the top rolls but to the steel rolls also. If efficient cleaning is expected of a spinner she should be given correct tools.



The device in the sketch has a brass hook at one end while the other end is flat and spatula-like. The hook is to clean off roll laps and to clean roll necks. The flat, spatula end is used to push out accumulated waste from between the saddles and the bottom rolls. The device can be made by the fixer, or in the mill machine shop, from $\frac{5}{16}$-in. brass rod.

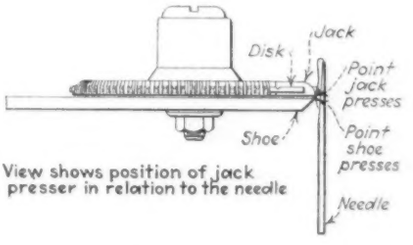
F. L. BAKER.

Setting Spring-Needle Jack Pressers

Occasionally knitters run into difficulty in setting the jack presser used on Tompkins and Crane spring-needle machines because they do not understand their construction thoroughly.

The accompanying sketch shows the setting of the jack presser. With this type of wheel, the jacks slip over the edge of the disk and are held in place by a pointed nub on the jack, which fits into a groove on the top side of the disk. The important point to note in setting the wheel is that the pressing of the needle beard is done by the lower edge of the jack and not where the disk meshes with the needles.

A simple method of setting these combination pressers is first to set the shoe in the desired position against the beards,



View shows position of jack presser in relation to the needle

which is usually as low as is practical for running. Then the round presser is moved against the needle, to give the pressure necessary to close the beards, and tightened. The closeness of the pressing point of the shoe, as shown in the illustration, gives a minimum use of space on the needle beard, due to the construction of the front end of the jack. G. L. L.

Steam-Reducing Valve For Crabbing Machine

On most modern crabbing machines, the steaming arrangement is an integral part of the machine and not carried out separately as in former days.

Repps, light serges, poplins, etc., are generally steamed to effect a permanent setting of the cloth, obviating cockling, crimping and cracking. In addition, many classes of cross-bred goods are steamed to obtain a soft hand. Often the benefits of the steaming process are lost, however, through the appearance of defects in the cloth, such as: yellowing of the fabric, causing bad dyeings or flat shades; scorching of the cloth, with its effect upon the hand; watering or embossing in the case of repps, etc.

Generally the defects enumerated above are caused by the steam pressure being too high. A reducing valve can be bought quite cheaply and fitted to the steaming arrangement so that a pre-determined pressure cannot be exceeded. The pressure should never be higher than 15 lb. per sq.in. and 7 to 9 lb. will be found satisfactory. The percentage of faults at this pressure will be negligible.

G. L. A.

QUESTIONS AND ANSWERS

Vat Dyes on Jersey

Technical Editor:
Will you kindly advise us what type of equipment we shall need for the dyeing of cotton jersey cloth with vat colors? (8125)

For dyeing cotton jersey cloth with vat colors a special type of machine has been designed. This machine can also be employed for dyeing direct, developed, and sulphur colors. It is also suitable for dyeing vat colors on other types of knitted fabrics. One feature of the machine is that it has no large back reel but is equipped with a small back reel, the position of which plays an important part in the successful operation of the machine. Use of a large reel is avoided, because it is not desirable to lift the cloth out of the reduced vat liquor any higher than is necessary. The machine is also provided with special water overflows, which are important in rinsing of the fabrics at various stages during the dyeing operations. The machine is designed to operate at two speeds—a slow speed for scouring or boiling-off; and a fast speed for the actual dyeing operations. Scouring and dyeing are both carried out on one machine, making it unnecessary to transfer the goods from one piece of equipment to another. The back curve of the machine and the width of the deck in the bottom front is so designed that tangling of the fabric is reduced to a minimum. This feature is also important, because in the dyeing of vat colors it is not good practice to have the machine stop during the dyeing operations. If the machine stops, the exposed portion of the cloth will begin to oxidize, and frequent stops due to tangling may lead to uneven dyeing.

It should be emphasized that although this machine is designed to produce satisfactory work, it cannot correct errors made through lack of actual vat-dyeing experience. Vat dyeing is one of the most difficult operations in the finishing industry and cannot be carried out successfully by rule-of-thumb methods.

▼

Holes in Hosiery

Technical Editor:
We are inclosing three stockings having holes in the leg fabric. These holes are showing up after the manufacturing processes are completed. Some are returned to us by customers. We should like to have your conclusions as to the probable causes. (8188)

The three stockings submitted show conditions which would lead to varying opinions as to the causes of the holes. Certainly the trouble is not of the same origin in all cases. One stocking has been cut through and through by mechanical action and appears to have been run over by a truck wheel or pinched in a dyeing-machine door. The holes in the other two stockings strongly indicate a slipped winder knot in the silk.

We are quite sure that all the holes developed either before dyeing or in the process of dyeing or boarding. The

stocking which shows evidence of having been cut clearly indicates that the damage was done while the goods were still in the gray, runs having been prevented by the gummed state of the silk. The other holes show evidence of having developed while in the process of dyeing, the small knot employed having slipped and caused the ends to separate and drop a stitch. This developed while the stocking was in the wet state and probably in the process of boarding. We are quite sure that all of the holes are what might be termed "manufactured holes," and should not have passed the inspecting department of the finishing room.

▼

Streaks in Acetate

Technical Editor:
We are inclosing a dyed sample of a Celanese 200 x 64. Upon examining it you will notice certain places where the ends appear dull and others more shiny in the warp, making it appear as though two different lots of stock were mixed. In your opinion what is the cause of this imperfection? (8191)

Two different kinds of warp stock have evidently been used. This may have resulted from not having the different lots labeled at redrawing. We also find that a number of the warp ends have been chafed, due either to a poor harness or reed or to some loom imperfection. We feel positive that these shiny ends could have been seen in the loom and should have been corrected there. No doubt they were difficult to see when the observer looked straight down at the cloth, but if he had inspected the fabric from different angles and sides he should have discovered the trouble. We are also of the opinion that if you had this fabric redyed, these streaks would be eliminated to a considerable extent, if not completely.

▼

Loop Effect on Cotton Fabric

Technical Editor:
The inclosed sample of small loop or knot effect has been submitted to me for special sample work. I want to bring out this effect on a C. & K. loom and should like to know if a two system lever motion with a regulated let-off would be the right attachment to the loom to make this fabric. This equipment would be similar to the let-off for seersucker, but working two extra beams instead of one only. Is a movable reed, such as is used in weaving turkish toweling, required? (8145)

The loop, or knot effect will not require a movable reed, but will require two beams. This is because of the difference in contraction or take up, which is about 100%, the hard crepe-twisted yarn forming the loops.

Owing to the staggered position of the loops, a two-system regulated motion will have to be used, as a hard-twisted yarn is difficult to control when being delivered from a loom beam. Therefore, the loops, to be even, will have to be delivered separately.

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Streaks and Two-Tone in Hosiery

Technical Editor:
I am inclosing herewith a sample of hosiery. You will note that this sample shows a marked difference between the shade of the foot and the leg and also that there is a pronounced streaky effect in the foot. Will you be kind enough to give me your opinion as to which of the various causes of two-tone is responsible in the present case for the difference in shade and also what is the cause of the pronounced streakiness. (8187)

Much of this trouble is due to the difference in construction between the foot and the leg. The foot is knit four courses per inch looser than the leg; and on a dark color, the difference in light reflection will give the effect of a difference in shade between the loose and tight fabric.

The streaky appearance is what is commonly called barré or washboard effect in three-carrier constructions. It is caused by uneven silk or uneven tension. In this sample it appears that the silk from one of the three cones in the foot is light in denier; this light-denier silk is dyeing lighter in shade, which tends to magnify the barré. It is purely a silk problem. If the foot had been knit with the same three cones of silk as were used in the leg, and with the same number of courses per inch, there would not have been any contrast in shade between the two. The legs knit from a given lot of silk should be footed with the same lot as far as possible. If a different lot is to be used, dye tests should be made on the two lots to make certain that they will dye the same.

▼

Hosiery Dye Not Fast

Technical Editor:
I am inclosing a stocking, the foot of which contains a 98/2, gassed, C. P. mercerized cotton yarn. You will note the difference between the silk and cotton dyeing. This, of course, is piece-dyed. When this hosiery was purchased from the retail store, it apparently was satisfactory; but after being washed at home with a neutral soap, the cotton contained in the foot discolored. The seaming thread up the back, which is from another manufacturer and is a 60/2 and 60/3 cotton, has also discolored. I shall appreciate your opinion as to the cause of the discoloration. (8167)

The variation in shade between the cotton and the silk in the samples submitted seems to be due to a difference in the fastness of dyes employed on the two fibers, rather than a difference in dyeing. You state that the union of shade was satisfactory at the time the stocking was purchased, and fading or discoloring of the cotton did not take place until the stocking was worn and laundered. We believe, therefore, that

QUESTIONS AND ANSWERS

the trouble is due to the selection of cotton dyes not best suited for the purpose of dyeing cotton hosiery, so far as fastness to washing is concerned. Since no information is supplied as to the dyes employed, it is not advisable to make any criticism of the dyes or to give any detailed recommendation for correcting the trouble, other than to advise that you be sure that the dyes employed on the cotton are reasonably fast to light and washing. With this much determined, you should then make certain that the dyeing operation is properly carried out to produce a satisfactory union between the cotton and the silk, and, at the same time, to favor fastening of the cotton dyes. Since an acid bath is not conducive to this, we recommend that the bath be kept on the alkaline side.

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Rayon Creping Unsatisfactory

Technical Editor:

Inclosed you will find a sample of dark-blue crepe, which we are trying to duplicate. The best we have been able to do is represented by the light-blue sample also inclosed. Kindly let us know what is the matter. Could the trouble be with our soaking bath? We use 1 gal. of sulphonated olive and coconut oil to 1 lb. of gelatin, soaking at 160° F. for 60 hr. In finishing we put the cloth in a bath of hot water (160° F.) and olive-oil soap to wash out the fugitive dye, then rinse in a hot-water bath, which develops the pebble as the gelatin and oil coating is dissolved from the yarn.

We are also inclosing two pieces of the cloth before going to the crepe bath and two pieces cut from same and put through hot-water bath to dissolve the gelatin and oil. We should like to obtain a much heavier pebble even than that in the dark-blue sample. We are using a 4 x 4 crepe construction. (8205)

The constructions of the light-blue crepe and the dark-blue crepe are not the same. We find that the sample of light-blue crepe has only 52 picks to the inch and the dark-blue sample which you are trying to duplicate has 60 picks to the inch. It is impossible to obtain a duplication where there is so much difference in picks.

Again, we find that there is a mixture in the samples of acetate and rayon. If you have not informed your dyer of this mixture, we advise your doing so.

Inclosed herewith you will find two of your samples processed with the same baths that you say you are using. You will notice the difference in the pebble. If we had been given larger samples to work with we could have increased the pebble considerably.

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Polishing Braid

Technical Editor:

We are at present getting a polished effect on our braid by running it through a set of rollers, paper and brass, with heat and pressure. The result obtained is not satisfactory. We want a better and deeper luster. Is there a solution or wax of any kind that can be applied to the roller to give us the desired result? (8186)

The sample of braid inclosed with your inquiry has about as high a luster

as can be expected with this type of material. We were unable, either by the use of waxes, etc., or by mechanical means, to improve on the results you are obtaining.

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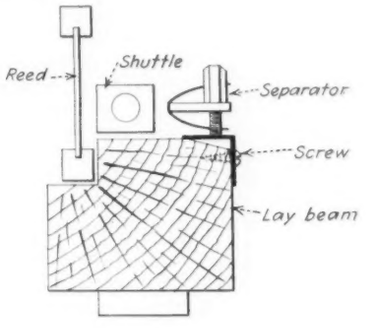
Loom Thread Separators

Technical Editor:

The article on loom thread separators on page 79 of the November issue of TEXTILE WORLD was of particular interest to me, but there is some question in my mind as to just how the metallic separator for filling threads operates. I am wondering if you will be so kind as to ask the author of this article to explain in more detail just what position the filling thread from each shuttle takes and how the threads are separated. I do not see how there can be any separation of the threads from the two shuttles. It appears to me that they would both lie in the same groove and that kinking or twisting together would occur as usual. (8199)

We have referred this inquiry to O. W. Bitzenhofer, the author of the article referred to, who replies as follows:

"The separator is placed on the lay beam at the box side as illustrated herewith, and is fastened by means of a



screw. If the change boxes are on the right-hand side of the loom, the separator is located as shown in the plan view at Fig. 1 in the November article. The same separator can be made to fit either side of the loom merely by removing it from its bolt and reversing it.

"The separator must be set with its lower edge some $\frac{1}{16}$ or $\frac{1}{8}$ in. above the race plate. There must be room enough between the reed and the separator for the shuttle to pass without touching the latter. The separator usually works best when about half way between the edge of the shuttle box and the edge of the cloth, but its exact location and setting are matters for experiment in any given case.

"I am inclosing a sample separator for your reader to try out on one of his looms, and I think that its operation will then be clear to him."

Hosiery Comparisons

Technical Editor:

We are mailing under separate cover samples of women's stockings numbered 1 to 4 and shall appreciate your advising us as to the difference between these stockings. We have received these from our representative in New Zealand, who states that one of our customers believes that there is a noticeable difference in the construction of two of these stockings in comparison with the other two. They are all made from six-thread, 13/15-denier, 83% silk. Some are delustered more than others owing to the fact that the trade is calling for a duller stocking. (8173)

Stocking No. 1 has 9 narrowings after the welt, 29 in the leg, 9 in the heel, 10 in the gusset, and 34 in the toe. The fabric bulk is 0.007 under the welt, with 44 courses per inch. Fabric No. 2 has 6 narrowings after the welt, 32 in the leg, 9 in the heel, 6 in the gusset, and 33 in the toe, with a bulk of 0.006 heavy and 40 courses per inch. Fabric No. 3 has 6 narrowings under the welt, 32 in the leg, 9 in the heel, 6 in the gusset and 34 in the toe, with 0.007 bulk and 43 courses per inch. Fabric No. 4 has 9 narrowings after the welt, 29 in the leg, 9 in the heel, 10 in the gusset, and 36 in the toe, with 0.007 bulk and 45 courses per inch.

The bulk is the same in all stockings except No. 2, where it is 0.006 heavy. Since this is apparently not caused by a missing strand, it is probably due to looser knitting. Samples 1 and 4 are best, especially as the feet show signs of being a coarser gage. Stocking No. 2 is sleazy all through and does not match well at the topping line; the seam is heavy. Sample 3 is sleazy, especially at the heel and at the leg narrowing; and it is uneven across the narrowings and seam after the welt. Stocking No. 4 has some sleaziness and the seamer has gone too far across the heel looping.

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Hosiery Dyes Unevenly

Technical Editor:

Inclosed are two stockings typical of many taken from one dye lot dyed by the usual one-bath method. You will note that there is considerable variation in the shade and depth of the welts of the stockings. Will you kindly advise us as to the cause of this variation? (8180)

This defect is due to the fact that the welt of one stocking is knit from one lot of silk and the welt of the other stocking from a different lot of yarn. It is possible for a single lot of silk to be divided and one part processed by the throwster differently from the other. A part of a lot could be thrown by one throwster and the remainder by another throwster. In either case, the two sections will not match in shade when dyed together. The kind and amount of chemicals and oils used in the soaking bath greatly affect the dyeing qualities of the silk. There is nothing that can be done to the dye-bath to remedy this defect. The stock must be kept separate before dyeing or must be separated as to shade after boarding.

THE PERSONAL PAGE

G. H. Dorr

P. B. Halstead

W. Ray Bell

Jas. P. Davis

P. L. Coonley

M. D. Vincent

G. H. Dorr, president of Cotton-Textile Institute; **Paul B. Halstead,** secretary of the Code Authority; **W. Ray Bell,** president of Association of Cotton Textile Merchants of New York; **James P. Davis,** chief of the textile unit of NIRA's Research and Planning Division, comprise the Research and Planning Committee for the Cotton-Textile Industry to handle the problem of adjusting production to current needs. Appointment was by the Code Authority chairman under NIRB order of March 26.

J. Ed. Millis, for the last 21 years secretary and treasurer of Adams-Millis Corp., High Point, N. C., has been elected president to succeed the late **J. Hampton Adams.** He will continue to serve as treasurer, but **T. C. Langley** will take over the duties of secretary.

Alfred Wolstenholme has been elected president of Thomas Wolstenholme Sons & Co., Inc., Philadelphia, succeeding the late **Fred Wolstenholme.** Other officers elected were: **William Roeger,** treasurer; **L. F. Schaeffer,** secretary.

Henry G. Nichols, president of Otis Co., Ware, Mass., has been elected a director of Pacific Mills.

Walter Hogg, president of Dallas (Tex.) Cotton Mills, was recently elected president of Texas Cotton Manufacturers' Association to succeed **Clinton Phelps.** Other officers elected were: **W. B. Munson,** vice-president; **W. L. Steele,** secretary.

Daniel R. Weedon, formerly president and treasurer of Holmes Mfg. Co., New Bedford, treasurer and general manager of Russell Mfg. Co., Middletown, Conn., and for the last year with Keasbey & Mattison, Ambler, Pa., has joined Sayles Finishing Plants, Inc., as vice-president, sales manager, and as a director.

S. H. Greene, formerly president, Cosmos Imperial Mills, Ltd., Hamilton, Ont., has been made chairman of the board. He has been succeeded by **Walter S. Burrill,** who will also continue to act as manager.

H. B. Moore, vice-president and general manager, Hardwick Woolen Mills, Cleveland, Tenn., has sold his interest in the concern and retired.

Benedict Gordon has been elected president of the newly-chartered General Webbing Co., which has taken over operations of the old Springfield (Mass.) Webbing Co. **Sydney Gayette** is treasurer and **William J. Parker,** clerk. **William J. Hyland, Jr.,** president of the old Springfield company, and **Floyd E. Cushman,** its treasurer, have been retained by the new corporation as superintendent and office manager, respectively.

Louis Neal, former president of Parknit Mills, Pawtucket, R. I., has been appointed New England representative of Bert Schnurer, Inc., with headquarters in Boston.

A. G. Staley, managing director, Staley & Staley, Ltd., hosiery manufacturers, Victoria, Australia, has arrived in this country for the purpose of purchasing equipment and supplies, and also to obtain information on the latest methods of manufacture.

J. H. Davenport, formerly secretary-treasurer of Davenport Hosiery Mills, Chattanooga, Tenn., was promoted to vice-president and general manager at the recent annual meeting of the mills. He succeeds **R. B. Davenport, Jr.,** who retired from the position of vice-president. **J. R. Wilkinson,** for many years auditor of the company, was elevated to the position of secretary and treasurer.

Abraham Weiss has resigned his position as manager of DuBois (Pa.) Silk Throwing Co. to become superintendent of throwing at Franklin Rayon Corp., Providence, R. I.

David O. Blevin will represent Dixie Mercerizing Co. in Chattanooga, Tenn., and the surrounding territory. Mr. Blevin will also continue to represent the Kaumagraph Co.

Textile Calendar

Eastern Carolina Division of Southern Textile Association, North Carolina State College, Raleigh, N. C., April 25, 1935.

Knitting Arts Exhibition, Commercial Museum, Philadelphia, Pa., Apr. 22-26, 1935.

National Association of Hosiery Manufacturers, annual meeting, Philadelphia, Apr. 24, 1935.

Underwear Institute, annual meeting, Philadelphia, Apr. 25, 1935.

American Cotton Manufacturers Association, 39th Annual Convention, Bon Air-Vanderbilt Hotel, Augusta, Ga., April 25 to 27, 1935.

National Cotton Week, May 6 to 11, 1935.

Cotton Manufacturers Association of Georgia, annual meeting, at The Cloister, Sea Island Beach, Ga., May 16 and 17, 1935.

M. D. Vincent has been appointed acting division administrator for the textile division of the NRA, succeeding **Prentiss L. Coonley,** who in turn succeeds D. M. Nelson as Code Administration Director for the NRA. Mr. Vincent, formerly president of the Colorado State Bar Association, was executive vice-president and general manager of the Rocky Mountain Fuel Co. of Denver, before coming to the NRA in February, 1934.

Arthur B. Barnes, formerly superintendent of the cotton goods division of American Printing Co., has been named treasurer of Massasoit Mfg. Co., Fall River.

J. R. McLaren has resigned as treasurer of the Thermo Mills, Inc., West Sand Lake, N. Y.

T. B. Covington, vice-president and general manager, Wade Mfg. Co., Wadesboro, N. C., has been elected a director of Southeastern Cottons, Inc.

Donald S. Ashbrook has resigned as general manager of the Slatersville (R. I.) Finishing Co. Mr. Ashbrook has not yet announced his plans for the future.

F. Gordon Cobb, formerly general manager, Springs Cotton Mills, Lancaster, S. C., is acting temporarily as personal representative for Donald Comer, president of the newly organized Pomona Mfg. Co., Greensboro, N. C. Mr. Cobb has accepted no position with the mill.

T. I. Dashiell, formerly with Pacific Mills, Lyman, S. C., is now engaged in technical and testing work with Spartan Mills, Spartanburg, S. C.

W. French Anderson, formerly merchandise representative, Durene Association, has joined merchandise staff of Butler Brothers, Chicago, Ill.

W. S. Moore has resigned as superintendent of Grier Cotton Mills, North Wilkesboro, N. C.

W. A. West, formerly head of the cloth department of Rhodhiss (N. C.) Mills Co., plant No. 1, has resigned and has accepted a similar position with the Graniteville (S. C.) Mfg. Co. He has been succeeded by **Floyd Bradley.**

W. B. Harmon has accepted the position of assistant superintendent of Cannon Mills Co., No. 7, Salisbury, N. C.

Harry Dillard, formerly connected with the Clyde Fabrics, Newton, N. C., has been made general manager of Eagle & Phenix Mill, Columbus, Ga.

F. A. Townsend, who has been cost

accountant for Sibley Mills, Augusta, Ga., has been promoted to superintendent.

D. C. Walker has become superintendent of the Fitzgerald (Ga.) Cotton Mills, succeeding **W. B. Dillard, Jr.**, who resigned to accept a similar position with a mill at New Braunfels, Tex.

William Green has resigned as superintendent of the National Worsted Mills, Jamestown, N. Y.

George Dickson has been appointed as New York selling agent for Ramapo Finishing Co., Sloatsburg, N. Y.

Myron Eastwood, formerly with American Woolen Co. plant at Enfield, N. H., has been made superintendent of Lawrence (Mass.) Woolen Co.

J. C. Harris, superintendent, Union Bleachery, Greenville, S. C., has been sent to the New York office of the company, and has been succeeded by **Hugh Patrick. E. H. Dobbins** has been appointed assistant superintendent, a new position.

Frank Pitman, Jr., Griffin, Ga., has been appointed superintendent and manager, Summerville (Ga.) Cotton Mills.

J. C. Windham has become assistant superintendent of spinning at Bibb Mfg. Co., Columbus, Ga. He was formerly associated with Manville-Jenckes Corp. Gastonia, N. C.

L. D. DeLoach has been appointed superintendent of weaving at the Covington (Ga.) Cotton Mills.

J. J. Crowder is now superintendent of spinning at the Merrimack Mfg. Co., Huntsville, Ala. He succeeded **P. B. Crouch,** who resigned because of poor health.

B. K. Bumgardner, formerly general superintendent of carding, Roxboro (N. C.) Cotton Mills, has become assistant superintendent of the Sanford (N. C.) Cotton Mills.

Wayne Dearborn has accepted position as bleacher with the Nashua (N. H.) Mfg. Co.

Harry Featherstone is now overseer of finishing at Kenwood Mills, Corinna, Me.

Roswell H. Heald is now overseer of dyeing at Cowan Woolen Co., Lewiston, Me.

James Young has become overseer of dyeing with Millbank Bleachery, Lodi, N. J.

Herbert Massey is now overseer of dyeing at the Haddam Woolen Co., Moodus, Conn.

E. L. Holler, formerly with Shuford Mills, Hickory, N. C., and more recently of Rockingham, is now assistant head of the carding division of Hannah Pickett Mills, plant No. 2, Rockingham.

Obituary

Alfred Lorand Lustig, aged 69, president of Apponaug (R. I.) Co., organizer of Acme Finishing Co., Pawtucket, and vice-president of U. S. Institute for Textile Research, died in Florida on March 19.

Buell H. Heminway, aged 69, president and treasurer of Heminway & Bartlett Silk Co., died at his home in Watertown, Conn., on March 15.

Howard Walker, aged 55, treasurer of Walker Bros. Dyeing & Bleaching Co., Chelsea, Mass., died on March 2.

Daniel Sharadin, aged 65, president of Daniel Sharadin Knitting Mill, Schuylkill Haven, Pa., died on March 7.

John E. McLaughlin, aged 82, founder of McLaughlin Textile Corp., Utica, N. Y., died on Feb. 28.

Dr. Carl Duisberg, aged 74, president of I. G. Farbenindustrie, A.G., Germany, died in Berlin on March 19.

Albert Birch, aged 71, president and treasurer of Birch Brothers, Inc., Somerville, Mass., died March 30. Mr. Birch was born in Manchester, Eng., and came to this country in 1883.

Edward G. Chace, aged 53, vice-president and treasurer, Berkshire Fine Spinning Associates, Fall River, Mass., died in Providence, April 6.

Luther Knowles, Sr., southern representative for textile department of Clinton (Iowa) Co., died last month at Greenwood, S. C. For 23 years he was connected in various managerial capacities with Carolina Cotton & Woolen Mills Co., Spray and Draper, N. C.

Lawrence M. Keeler, aged 65, a director and former agent, Whitin Machine Works, Whitinsville, Mass., died at his winter home in Florida, Mar. 28.

Mark Pettway Burwell, aged 70, president of Peck Mfg. Co., Warrenton, N. C., died March 6.

John H. Walton, aged 53, for many years vice-president of Eagle & Phenix Mill, Columbus, Ga., died at his winter home in Florida on March 9.

Edward Moore Barlow, aged 78, formerly general sales manager of Stehli Silks Corp., New York, until his retirement in 1927, died March 13.

J. R. Dunson, aged 46, resident agent of W. A. Handley Mfg. Co., Roanoke, Ala., died last month in Miami, Fla.

W. E. Holmes, assistant superintendent of Henderson (N. C.) Cotton Mills, died recently.

Ralph H. Clore, general sales manager of Medart Co., St. Louis, died March 6.

Fred C. Thompson, aged 51, vice-president and general manager of Morse Chain Co., died March 6.

Walter Elsaesser, aged 42, for the last eight years associated with Bellman Brook Bleachery, Fairview, N. J., died on March 23.

Industrial Art Exhibit in April

Numerous textile industry leaders are on the sponsoring committee which is cooperating with the National Alliance of Art and Industry in arranging the Industrial Art Exhibition to be held April 15 to May 15 at the Rockefeller Center forum, New York. The chief aims of the exhibition will be to demonstrate the social values of important industrial developments in making life more comfortable and attractive for the nation as a whole. Members of the committee include Albert Blum, president of United Piece Dye Works; Henry E. Stehli, vice-president Stehli Silk Corp., and George A. Sloan, chairman the Cotton Textile Code Authority.

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Ramie's Faults

The weakness of ramie fibers, yarns, and fabrics when subjected to bending and torsion is due to a large number of transverse fissures of varying depth in the micellar structure of the fiber, according to a report by G. Gordon Osborne, fellow of the Textile Foundation, in the December *Textile Research*. "Mechanical action," states Mr. Osborne, who has been working on the microanalysis of textile fibers under Prof. E. R. Schwarz at Mass. Institute of Technology, "starts and intensifies the formation of these markings and, as treatment proceeds, the number of trans-fiber fissures increases."

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Lowell's Southern Alumni Organize

A committee of former students of Lowell (Mass.) Textile Institute located in the South has been formed to establish a southern alumni association. The first formal meeting (including a dinner) was held in Greenville, S. C., Tuesday evening, April 9, in order that all Lowell men visiting the Southern Textile Exposition would have a chance to attend. Charles H. Eames, president of the institute, was scheduled to attend. Alumni active in the new organization include H. P. Goller, E. R. Ford, Lawton Cleveland, Clarence Hooper, G. P. Feindel, A. R. Thompson, S. H. Williams, J. C. Robertson, P. H. Del Plaine, A. K. Haynes, and C. H. Potter.

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M.I.T. Summer Courses

Textile microscopy, textile technical analysis, and textile laboratory are the special summer courses being offered again this year by the Massachusetts Institute of Technology, Cambridge, Mass., under the direction of Prof. E. R. Schwarz. The work begins on July 24 and concludes Sept. 4.

Old Age Pension Plans

"Facts About Old Age Security" is the title of the report of a study recently concluded by the National Conference of Business Paper Editors. This study covers the social and economic aspects of the problem, reviews various pension plans already established in the United States, analyzes the cost of these plans in the light of limited actuarial experience, and points out types of legislation to provide old age pensions that have been enacted in foreign countries. Copies are available at 10c. each, on application to this publication or to the National Conference of Business Paper Editors, 330 W. 42d Street, New York.

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Masters' Degrees at Lowell

The Massachusetts state legislature has given to Lowell Textile Institute the privilege of granting the degrees of Master of Science in Textile Chemistry and Master of Science in Textile Engineering to students who have completed satisfactorily graduate work.

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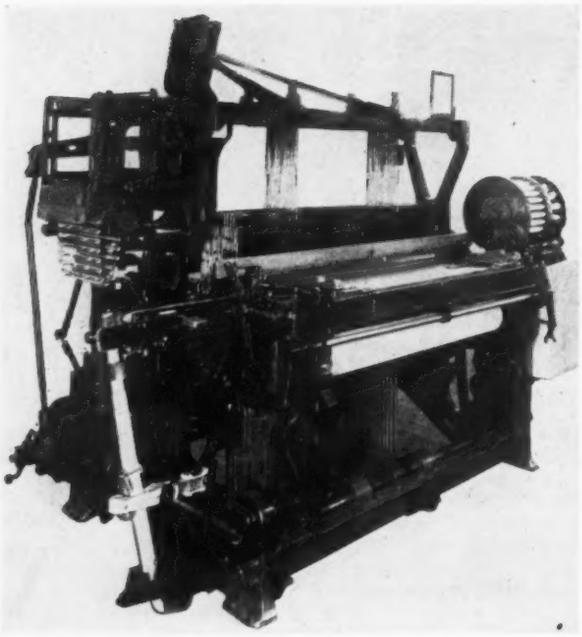
Purchasing Agents to Meet

The National Association of Purchasing Agents will hold its annual meeting at Waldorf-Astoria, New York, May 20-23. Among the addresses is one on textiles by A. W. Zelomek.

NEW MACHINERY



Looms for Sheetings and Fancies

Two new models of the X series of automatic looms have been announced by Draper Corp., Hopedale, Mass.

Model XL, designed to replace the old model L for wide sheetings, is built in widths from 72 in. to 110 in. A typical performance is that a 90 in. loom will run at 124 picks per min. Features of this double-fork loom stressed by the manufacturere are: internal-expanding brake that not only conserves space but also eliminates a possible point of "play" in the drive; cam-on-cam motion; heavy-duty parallel motion as part of a practically new picker motion; new, adjustable, warp-stop motion; provision for protecting shuttle from squeezing when loom bangs off; means for leveling lay; shuttle guard; built-in left-hand drive only, keeping the pulley on the same side as the shipper; redesign to permit higher speeds.

Model XK is designed for the weaving of fancies in rayon and fine cottons, with a 25-harness, C. & K. special, high-speed dobby. A typical loom will run at 172 picks per min. on a 20-harness pattern, 76x72, 40s cotton warp and 50s cotton filling. In addition to the usual features of the X series, the following points are emphasized: loom is built only one hand with the drive on the right-hand side and the dobby on the left, allowing the dobby to be placed 10 in. lower than in previous models, thus decreasing vibration and allowing for easier inspection and adjustment; dobby supported by rod attached to frame rather than to floor; grease guard under dobby to keep stains from cloth.

Motorized Reducers

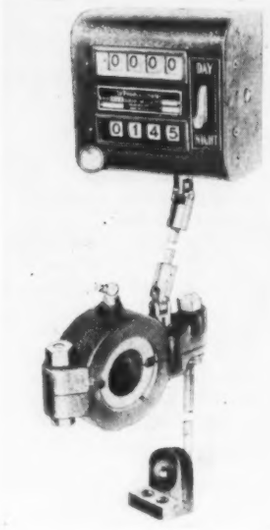
Link Belt Co., 910 S. Michigan Ave., Chicago, has announced a new line of motorized speed reducers stressing accessibility of motor and high-speed gears. Features include all helical-type gears with heat-treated, alloy-steel teeth, anti-friction bearings, well braced and ribbed gray-iron housing which provides a rigid mounting for bearings, shafts and motor, and which constitutes a reservoir for automatic lubrication of gears and bearings. The motor is incorporated as an integral part of reducer to insure proper alignment of the motor shaft.

Elastic Yarn Tester

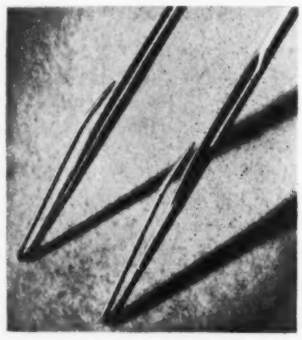
Latest developments in tensile-strength testing machines are embodied in the new Model L-P tester for elastic yarns now being manufactured by Henry L. Scott Co., Providence, R. I. Features include heavy construction of head and frame to insure alignment and accuracy, lever mounted on completely housed and protected ball bearings, spark-style stylus adjustable for recording data of multiple samples, dead-weight lever principle with no springs, chart for recording stress-strain data, heavy-resistance weight close to bearings, multiple pawls with twelve rack teeth per inch to eliminate drop back, large clear dial, Z-1 clamps, transparent elongation measure to protect operator from injury by flying ends, accessible coil for spark, button to control spark intervals on record, transformer for spark coil circuit, stainless-steel flexible draw bar, instantaneous return of pulling jaw to starting position, and heavy iron base to eliminate floor screws and permit easy moving.

Center-Drive Pick Counter

Development of a new center-drive pick counter is announced by Durant Mfg. Co., 1925 Buffum St., Milwaukee, Wis. A unique feature of the device is that the driveshaft is directly in the center of the counter, thus making the counter suitable for application on either end of the loom. This simplification makes the counters interchangeable and permits use of one type of counter throughout the weave room.



Among the other new features of the new pick counter which are designed to add to its serviceability are the following: The shift switch has been moved to the front of the counter and improved so that one can shift from day to night record, or vice versa, as easily as operating a light switch; this is equally true whether the loom is running or idle, eliminating the necessity of starting the loom in order to switch the record to the other shift on the counter. The figures on the dials have been raised and made so distinct that they can be read from a considerably greater distance than was the case with older models. The counter has been built with exceptional ruggedness to withstand the severe vibration of the average loom. All parts are constructed from rust-resisting alloys, bronze, and stainless steel throughout so that they will be unaffected by the extreme humidity of the weave room. Connection with the loom shaft is of the split-worm and housing type, common to all Productimeter pick counters, which clamps on the loom shaft, and permits installation of the counter without drilling or removing any parts of the loom. A fool-proof reset under lock and key, on the resetting models, prevents falsifying actual records of picks woven; a new design of a positive lock prevents creeping of the dials of either shift when the other is running or when the counter is in neutral; and a sealed case prevents tampering with the record.

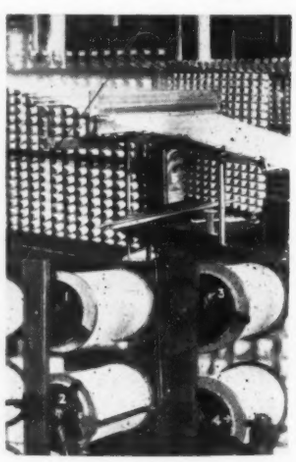


Improved Hosiery Needle

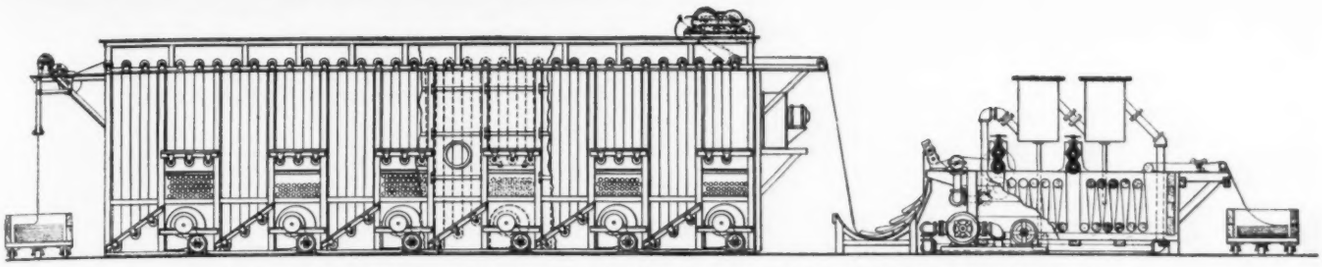
To eliminate corrosion in the grooved space between the tip of the beard and the top of the groove due to accumulated dirt, oil and lint, Torrington Co., Torrington, Conn., has developed a full-fashioned knitting needle with a much shorter groove. The new needle is said to be stronger, straighter, more uniform and to produce a smoother, finer knitting than the long-groove type. This refinement is expected to lessen greatly the problem of corrosion which has increased tremendously during the last few years, due to the trend away from ingrain toward dipdyed hosiery and all-silk knitting.

Stop Motion for Warpers

A stop motion for warpers designed to change indicating lights from green to red and to stop the machine promptly in event of end breakage, has been introduced by Barlo Engineering Corp., 3728 30th St., Long Island City, N. Y. The device consists of a rotary mercury switch operated centrifugally on each spindle. Adjustable buzz bars for electrical contact are mounted on each spindle directly behind the rotor. The master control box, containing the indicating lights, is placed directly on the carriage under warper. While the stop motion is entirely automatic, in case of power failure it may be operated manually. Spindles not in use can be cut off. This stop motion cannot chafe or break the fibers, as it does not touch the yarn. A



AND PROCESSES



CONTINUOUS SYSTEM OF SATURATING, VACUUM EXTRACTING WITH ACID-RECOVERY SYSTEM, — ALSO DRYING AND CARBONIZING

further advantage is that it acts as a tension device to prevent chattering and allow freewheeling. In the accompanying illustration, features of the stop motion are designated by the following numbers: rotor, 1; mercury channel, 2; four-prong tension spring to insure contact, 3; pneumatic clutch on which spools rest, 4; control box, 5.

Improved Bobbin Cleaner and Stripper

Several improvements have been made in the Termaco roving-bobbin cleaner and in the 1935 model Type K bobbin stripper, devices manufactured and sold by Terrell Machine Co., Charlotte, N. C.

The Termaco roving-bobbin cleaner now has a bobbin elevator designed to catch clean bobbins as discharged and raise them to the top of any regulation roving box. This elevator eliminates use of small boxes and frequent unloadings. No platform is necessary to raise the discharge level of machine. Consequently, the operator is enabled to devote more time to actual operation of the machine. Other improvements include a friction gear in the conveyor belt to protect the machine and bobbins from careless operation, and an attachment for blowing out the bore of the bobbins. The latter device is connected to the regular mill compressed-air line.

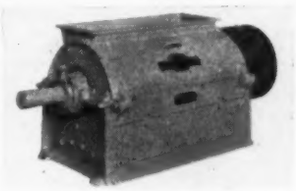
Improvements in the Type K bobbin stripper, which may also be applied to the older model machines, include stripper-blade designed to reduce bobbin damage, adjustable head supports to permit accurate centering of bobbin barrels in stripping position, attachment to blow out bore of bobbins in order to reduce the number of slugs in cloth (connects to compressed air line), extra device to blow rayon waste away from stripper-blades and wipers, to which it clings because of static electricity (produces own air).

Other new features consist of an improved pull-head and stop assembly, stripper-arms keyed to stripper-shafts to prevent slipping out of position (stop screws take care of adjustments), adjustable push-head instead of former interchangeable heads, cleaning stroke lengthened 2 in. in order to handle 10 in. bobbin, improved plunger assembly to protect machine and bobbins, improved gear guards and new guard over clutch, bobbin elevator as described in connection with the Termaco roving-bobbin cleaner.

Rotary-Knife Cutter

For flocking rags and similar waste products, Sprout, Waldron & Co., Inc., Muncy, Pa., is manufacturing a rotary-knife cutter, known as Type SB, containing ten knives arranged in a new manner. The stationary knives are distributed around the entire periphery of the cage inclosing the rotor, instead of being bunched all on the sides.

Better results are said to result for the following reasons: (1) Stock flows freely of its own weight into the cutter. Position of screens is such that material is discharged as soon as cut; material which happens to be of desired size is discharged through top screen before being cut. (2) As the stock passes the first knife, a partial reduction is made, and the reduced stock is discharged through the screen next to it; this process is carried on around entire periphery of the cutter edge so that all parts of machine are working continously. (3) A wide variety of materials can be handled in this cutter because the arrangement of knives is designed to cut stringy materials before they can wrap around the rotor; swirling action is



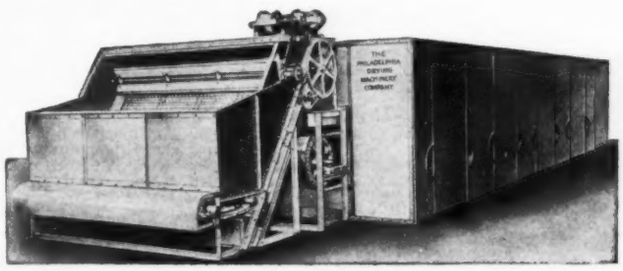
eliminated and more cuts per revolution result.

Special features include individual knife adjustment to assure maximum life and greater flexibility, hinged doors to permit easy accessibility to interior, and two base sizes for use with hopper or hand-feeding.

Card Clothing Tension Machine

A new tension machine for use in mounting card clothing has just been announced by Davis & Furber Machine Co., North Andover, Mass. The machine is suitable for use on woolen, worsted, and cotton cards, and is designed automatically to rub in or re-set loose wire. A special control on the fillet is designed to control tension within 10-lb. limits and thereby to increase the life and service of the clothing. The tension machine, fixed on the card frame or roll-covering stand, consists largely of a traversing head for guiding and applying tension to the fillet, a slide bed, and a corrugated wire-rubbing roll. The head, which traverses automatically at a speed corresponding to the width of the fillet, accurately guides the clothing to the cylinder roll.

The fillet is pulled over the corrugated wire rubbing roll and through the guide plate, passed around a three-step friction cone pulley with three step guides, and over a weighing lever to the cylinder, doffer, or roll to be covered. Back tension is obtained by means of the varying sizes of cone-pulley sections, and by a brake band on the end of the cone-pulley shaft. Surface tension is obtained by pressure applied in the guide plate. The cone pulley and step guides give



a tension of aproximately 100 lb. on the back of the fillet, while the brake band on the end of the cone-pulley shaft may create a further tension of 150 lb., totaling possibly 250 lb. back tension without disturbing the wire. The remainder of the desired tension is obtained by pressure on the face of the wire in the guide plate.

The weighing lever referred to is pivoted against springs and actuates an indicating needle which describes the exact tension as it is applied. The automatic control contains an extra compensating slide plate in the guide. As the tension increases, the weighing lever, pulled forward by the fillet, automatically moves the tapered slide plate backward so that the thinner end is under the feed-guide-plate tension screw, thus reducing tension.

The fillet on its way to the guide plate passes over the rubbing-in roll. The surface speed of the roll is greater than the speed at which fillet is fed, so that corrugations on the roll surface, in contact with the back of clothing, should rub in any loose wire.

Hardfacing Electrode for Cutting Edges

An arc welding electrode, known as Toolweld, designed to restore worn cutting edges on all types of tools, is announced by Lincoln Electric Co., Cleveland, Ohio. The new electrode is said to provide a deposit equivalent to high-speed tool steel and to retain its hardness to approximately 1,000°F.

Suction Pump

A new pump having a suction lift of 28 ft. has been announced by Decatur Pump Co., Decatur, Ill. The pump, known as the Niagarette, is designed to prime itself on extreme suction lifts and handle a mixture of air and water or air alone. Construction features include stainless-steel shaft mounted in oversize ball bearings, bronze impeller and raceway which may be removed without disturbing water piping.

The pump is also equipped with a galvanized cast-iron base and pump case, with welded and galvanized 4-gal., 10x12-in. storage tank.

Improved Carbonizer and Stock Dryer

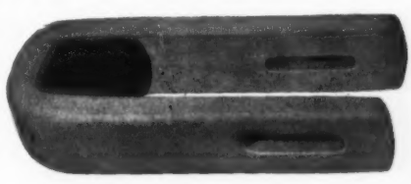
Two improved machines, a continuous carbonizer and a streamlined automatic stock dryer, have been placed on the market by Philadelphia Drying Machinery Co., 3351 Stokley St., Philadelphia.

The carbonizer is divided into three compartments, each fitted with automatic temperature control and separate fans for air circulation, through which the goods pass continuously under close control. To secure uniform saturation, the cloth, in open width, makes vertical passes in a saturating tank where the acid concentration is kept automatically at a predetermined strength. From here, it travels to a vacuum extractor which removes excess liquor. Finally, the cloth is dried and carbonized under carefully regulated conditions. Other new features include improved centrifugal fans, fin-type heating coils, an acid-recovery system, and heavy insulation throughout.

The drying machine is self-contained, compact, and streamlined inside to decrease resistance to air currents. Recirculating fans are of the turbine type. Steam coils are arranged in staggered banks to give maximum efficiency. Panels are heavily insulated to prevent loss of heat by radiation. An endless conveyor-apron is provided with chains at the sides to assure straight-line movement and uniform width. The conveyor and automatic feed are driven through variable-speed transmissions in order to furnish different drying speeds.

Canvas Lug Straps

Principles used in automobile tire manufacture are followed by E. H. Jacobs Mfg. Co., Danielson, Conn., in the construction of its reinforced Very-best lug strap. The master or outside cover of 8 and 10 oz. army duck is comparable to the outside rubber coating of a tire. Reinforcing pieces of the same



material, laid at a 45° angle, are symmetrically built up around the slots where the strain comes, along the sides where the wear occurs and in the heel where most hazards localize. The thickness of the strap is approximately ½ in. at the slots and builds up to nearly 1 in. at the bend or heel, all within the master cover and without block, plug, or rivets. The yarn in the duck and plies is insulated by impregnation with a cement in order to add to the stability of the strap. A special feature is the square heel, lined with Brooksbank hairy leather, so designed that the picker strikes home immediately, with a minimum of adjustment due to stretch or wear. The manufacturer points out that a group of textile engineers recently tested the new strap by placing six units on as many high-speed Model-X looms, checking them at the end of three weeks. Four lug straps were said to show no stretch at all; while two showed ⅛-in. stretch.

Molded Spools

Spools, molded from Bakelite, are being made and used by Lyseth Thread Co., Worcester, Mass. Advantages claimed for

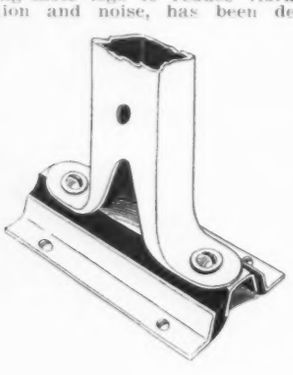
these spools include special design to permit use of last inch of thread, strong construction to resist rough handling in shipping, smooth surface to prevent pulling of thread, and a specially constructed base so designed that spool cannot be set wrong side up. The last-named feature prevents the thread from being unwound in wrong direction.

Position Transmitter

A duplicate-position telemeter system for indicating and recording at a distance the position of mechanisms, such as valves, water levels, engine governors, etc., has been developed by Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. An improved duplicate-position-type motor operates a direct-acting pen which records on a strip-type chart variations in remote mechanisms.

Vibration Insulator

An insulator, suitable for installation on the bottom of sewing-table legs to reduce vibration and noise, has been developed by Union Special Machine Co., 400 N. Franklin St., Chicago. The device consists of an inverted U-shaped steel channel bonded to the outer sides by two blocks of live rubber. Angle irons serve as a base for anchoring the insulator to floor, and the table leg is bolted to a center channel iron. The only contact between the table leg and the floor is through blocks of rubber.



Rubber Joints For Chemical Pipes

A rubber ring, known as Flexlock, designed to seal joints of chemical-carrying stoneware pipe lines is announced by U. S. Stoneware Co., 50 Church St., New York. These rubber joints are said to offer mechanical flexibility to 15° and to absorb vibration, such as that set up by pumps. It is further asserted that rubber-corroding chemicals may be handled without damage, as they tend to form an outer protective crust on the exposed end of the rubber joint, this crust preventing further corrosion. To install, a ring is coated inside with Lubriseal paint and dropped into the socket. Into this is pushed the spigot end of a similarly treated adjoining pipe. The joint is then ready for use.

Other recent developments of this company include acid-proof, vacuumized-clay, laboratory-table troughs; hemispherical stoneware sinks; acid-proof stoneware floor drains; acid-proof stoneware waste receptacles for draining filter papers, etc.; and perforated stoneware slop jars designed to be placed in troughs or sinks.

Business Literature

Rayon Yarn Production. Atwood Machine Co., Stonington, Conn. March issue *Atwood Twists* containing useful table showing theoretical production of 100,- 150,- and 300-denier rayon yarn at various spindle speeds and number of turns per inch.

Gears and Sprockets. Medart Co., 3500 DeKalb St., St. Louis, Mo. Catalog No. 58G containing description, weights, dimensions, and price list of gears, sprockets, and chain.

Sewing Machines. Consolidated Sewing Machine & Supply Co., 1115 Broadway, New York. Folder citing advantages of precision rebuilt sewing machines.

Silent Chain Drive. Link-Belt Co., 910 S. Michigan Ave., Chicago. Illustrated booklet showing applications of Silverstreak chain drive on long and short centers.

Power Transmission. Morse Chain Co., Ithaca, N. Y. Booklet illustrating positive power transmission by means of full-page photographs showing actual installations.

Industrial Location. Holyoke Water Power Co., Holyoke, Mass. Folder describing industrial advantages of Holyoke as a manufacturing center.

Belting. B. F. Goodrich Co., Akron, Ohio. Folder listing fourteen improvements in belt construction during the last five years.

Circuit Breakers. General Electric Co., Schenectady, N. Y. Folder presenting advantages of Type AL-2 trip-free circuit breakers.

Ceiling Condensers. Davis & Furber Machine Co., North Andover, Mass. Folder illustrating ceiling condensers used with dusters and pickers for cleaning and conveying stock.

Dust Menace. U. S. Hoffman Machinery Corp., Air Appliance Division, 105 Fourth Ave., New York. Booklet, "Remove the Menace of Dust," treating broadly the subject of dust hazards in industry and describing Hoffman cleaning apparatus.

Filling Winder. Universal Winding Co., 95 South St., Boston. Catalog No. 90 showing general outline of filling winder parts in correct relation to one another.

Rayon Warp Sizing. Charles B. Johnson, Paterson, N. J. First three issues of *Rayon Warp Sizing Specialist*, containing articles on sizing of synthetic yarns by Dr. Harold D. W. Smith, Dr. J. B. Quig, E. H. Benzing, and Gordon Waywell.

Peroxide Bleaching. E. I. du-Pont de Nemours & Co., Inc., Wilmington, Del. March issue of *DuPont Magazine* containing historical article on bleaching.

New Publications

The Manufacture of Hosiery and Its Problems, by E. M. Schenke; National Association of Hosiery Manufacturers, New York. $1.50.

To the manufacturer of hosiery this book is mainly useful for its extensive section on hosiery defects and their prevention and also its section on hosiery standardization. Mr. Schenke is research associate for the association at the National Bureau of Standards, Washington, and his discussion of the elimination of defects is based on the 5000 problems which have been handled by the associateship during the eleven years of its existence. Special attention is given to the problems of "two-tone," or difference in shade between leg and foot, and to sleaziness. The section on standardization includes the Commercial Standards sponsored by the Division of Trade Standards, Bureau of Standards.

Also of interest to manufacturers is a section on analysis and testing, which includes methods of fiber identification and the determination of oil content and of fastness. An appendix contains a series of useful tables, including data on hosiery-box dimensions, oil specifications, courses and yarn sizes for various gages of full-fashioned and seamless hosiery, deniers and filaments in rayon yarns, strengths and turns per inch for mercerized cotton yarns, etc. The typp yarn-count system is recommended for numbering all hosiery yarns, and a table is provided for converting from typp count to equivalents in cotton, silk, woolen, worsted, and linen systems.

Mr. Schenke has also included several chapters directed to retailers, consumers, and others who desire some rudimentary knowledge of knitting history, technology, and nomenclature. He has probably done as well as it is possible to do in describing the technology of knitting in so few pages, but it is questionable whether the layman will feel that he has attained a clear understanding of the knitting processes when he has finished reading. Nevertheless, some excellent diagrams are provided of the movements of full-fashioned needles, sinkers, dividers, and knock-over bits; and these illustrations should prove helpful to those already having some acquaintance with knitting principles.

Power Development of Small Streams, by Carl C. Harris and Samuel O. Rice; Rodney Hunt Machine Co., Orange, Mass. $2.

This new edition gives in non-technical terms a practical and working knowledge of the installation and operation of small water-power plants for furnishing electric light, power, heat, water supply, and fire protection for towns, country homes, plants, etc.

Dictionary of Embroidery Stitches; by Mary Thomas; William Morrow & Co., New York.

This volume contains 305 stitches arranged alphabetically for easy reference, each explained and illustrated by a diagram. Alternative names of stitches are given with reference to the name which the author regards as most authoritative.

Business News

U. S. Textile Machine Co., Scranton, Pa., has announced the appointment of W. S. Taylor as New York representative for rayon and silk equipment, with headquarters at 171 Madison Ave.

T. B. Woods Sons Co. has moved its New York office from 30 to 50 Church St.

Willcox & Gibbs Sewing Machine Co., New York, announces the following changes in its personnel: Griffith M. Lewis has been transferred from the Troy, N. Y., office where he was manager, to the home office where he will be in charge of field experimental and development work; Charles H. Foster has been appointed sales representative at Dallas, Texas; George E. Kohnen has been transferred from the Cincinnati office of the company, to the Newark, N. J., branch.

Corn Products Refining Co., New York, has appointed L. G. Manning as associate in the textile development and research department. Mr. Manning has had many years experience in the field of textile development and testing, including eleven years as a professor at New Bedford (Mass.) Textile School.

Centrif-Air Machine Co., Atlanta, Ga., recently elected John W. Merry president, to succeed his father. C. B. Chiles was elected secretary and treasurer. John B. Brennen continues as vice-president and general manager.

Union Special Machine Co. has recently appointed T. O. Biggers as its representative in Kansas City, Mo., succeeding the late E. J. Meek. F. E. Hodtum has been appointed as an additional representative in the Atlanta, Ga., territory.

C. J. Tagliabue Mfg. Co., Brooklyn, N. Y., has opened a new branch factory at 1916 Jackson St., Dallas, Texas. This branch takes the place of their old Shreveport, La., branch, which has been closed. A. G. Koenig, southwestern district manager, will be in charge at Dallas.

Colgate-Palmolive-Peet Co., Jersey City, has launched a contest. Twenty free tours of Europe—a 34-day journey—will be given the winners in a letter-writing contest, and the dealers selling the winners will be awarded $500 each, or a total of $10,000. Entrants in the contest are to write letters of 100 words or less on the subject: "Why I Use and Prefer Palmolive Soap."

Robert Gair Co., Inc., New York, has announced the acquisition by purchase of the plant and equipment of **Androscoggin Pulp Co.,** South Windham, Me.

Medart Co., St. Louis, Mo., has appointed Ralph H. Clore general sales manager. Mr. Clore, formerly general sales manager Electrical Tool Co., succeeds F. P. Kohlbry, who resigned to assume charge of Machinery & Welder Corp., Chicago.

TEXTILE WORLD ANALYST

"Crisis" petering out despite calamity-howlers

First Quarter Mill Activity Slightly Over Last Year: Textile mill activity, gauged by consumption of raw material, was 5% greater for the first quarter of 1935 than for the corresponding period of 1934. It was about 2% below the activity for the same period of the 1924-31 average, roughly assumed as "normal." These are preliminary estimates, subject to revision.

THE sense of crisis in the textile industry, which we mentioned last month, rose to a crescendo during March. We would call it one of the noisiest crises the industry has ever experienced. It was a dull day that did not nurture at least one newspaper headline announcing another bill or resolution introduced into Congress calling for some sort of an investigation of the textile industry.

Subsequently, the tumult started to die down, and it is our impression just now (in the early part of April) that the calamity-howlers are having a tough time maintaining interest in their crisis. It's rapidly becoming last month's news —and anyone knows how dead that is.

The peculiar thing is that there really wasn't much more reason for the better feeling, than there was for the agony in the first place.

Looking back, it becomes increasingly evident—as we indicated editorially last month—that little in the way of new development was responsible for the start of all this. It just represented the cumulative effect of a lot of mean situations which had been bothering the industry for some time: higher costs, lower demand, losses instead of profits, processing taxes, liquidations. When a few of the last-named griefs coincided, they got local Chamber of Commerce officials "where they live"—and the fuss started. It's still on, but somewhat allayed by the realization that something sudden and tragic hasn't happened after all, but that it's the same old textile problem with a few new manifestations.

One of the principal noise-makers during March was the row between the AAA and the industry. That could properly be called a good old back-fence squabble. The AAA didn't show up so well; it got out some "statistics" which needed fumigating, to say the least. The net result of the row to date is exactly nil. The AAA has every intention of continuing the processing tax, and the industry has every intention of fighting it. Which is where we started from.

One of the factors contributing to the easing of the pressure and the lifting of the sense of crisis was the NRA order permitting prompt action to adjust production to demand in cotton textiles. Another was the accumulation of evidence that stocks of goods were not piling up to the extent that some had believed. From every standpoint the feeling just now is better than it was a month ago. The following comment by Standard Statistics Co. is of interest:

"Despite the recent active rate of mill operations, aggregate inventories in mill and distributor hands are not believed to have reached excessive levels. The subnormal production rate in effect throughout the greater part of 1934 reduced stocks considerably, while absorption of textile fabrics at retail has continued to record moderate gains over that of a year ago. For this reason, the reaction in mill activity is likely to end sooner than the usual seasonal experience. Granted a respite from prevailing general business uncertainties, primary demand later will perhaps revive sufficiently to lift production schedules sharply during the summer months."

On prices, reference to Tables I and II shows how little real effect the cotton break had upon manufacturing margins in carded fabrics and yarns. That was due to the fact that prices after the break were largely nominal.

March prices, as shown in TEXTILE WORLD's price index numbers, continued the downward trend, with raw wool showing the greatest decline. Wool has lost 44 points in the last twelve months and was lower in March than at any time since May, 1933. Yarn and cloth indices in both the cotton and wool groups declined less than the respective raw materials, gray cotton cloth, for example, losing only two points while raw cotton declined seven points.

TABLE I. CARDED FABRIC MARGIN

Date	Margin in cents	Date	Margin in cents
August, 1933....	21.4	December, 1934	16.2
October, 1933...	19.1	January, 1935..	16.2
January, 1934...	18.4	February, 1935..	16.0
April, 1934.....	17.6	March, 1935.....	15.9
July, 1934.....	15.5	Mar. 6.....	15.2
August, 1934....	16.6	Mar. 13.....	15.7
September, 1934	18.6	Mar. 20.....	16.4
October, 1934...	17.4	Mar. 27.....	16.0
November 1934.	15.8	Apr. 3.....	16.0

TABLE II. CARDED YARN MARGIN

Date	Margin in cents	Date	Margin in cents
August, 1933....	23.5	December, 1934.	13.5
October, 1933...	20.0	January, 1935..	13.5
January, 1934...	18.3	February, 1935..	13.9
April, 1934.....	15.9	March.....	14.4
July, 1934.....	14.7	Mar. 6.....	14.4
August, 1934....	15.3	Mar. 13.....	14.6
September, 1934.	15.6	Mar. 20.....	14.6
October, 1934...	14.6	Mar. 27.....	14.2
November, 1934.	13.5	Apr. 3.....	14.4

▼ ▼ ▼

Textile World's Price Index Numbers

Date	Cotton Index Numbers: Cotton	Yarns	Gray	Colored	Wool Index Numbers: Wool	Tops	Yarns	Cloth	Silk Index: Raw Silk
July 31, 1914..	100	100	100	100	100	100	100	100	100
1932, average..	51	76	73	100	78	97	115	128	34
1933, " ..	84	116	110	113	116	135	139	181	35
Jan. 1934.....	124	151	139	144	153	180	181	222	32
Feb. 1934.....	132	148	146	144	153	180	181	222	34
Mar. 1934.....	132	149	145	142	152	178	180	209	31
Apr. 1934.....	128	144	141	141	147	176	180	209	30
May 1934.....	125	136	132	140	140	166	170	209	27
June 1934.....	132	136	132	140	138	160	169	209	26
July 1934.....	135	148	136	140	138	159	161	209	25
Aug. 1934.....	141	150	136	140	130	150	160	209	25
Sept. 1934.....	138	148	149	144	127	145	155	190	24
Oct. 1934.....	133	141	143	140	125	140	154	188	26
Nov. 1934.....	134	136	138	140	124	137	154	190	27
Dec. 1934.....	135	136	139	140	124	136	154	190	29
Jan. 1935.....	135	138	137	140	124	132	154	190	32
Feb. 1935.....	134	138	136	140	116	124	152	190	31
Mar. 1935....	127	136	134	139	108	118	148	190	29

Note: All cotton indices since Aug. 1, 1933, include processing tax.

TEXTILE WORLD'S

Cotton Digest

IT seems almost unbelievable that the AAA could give out the statistics contained in its now-famous statement of March 27 on the cotton processing tax, without knowing that those statistics were cock-eyed—or, rather, that the AAA's interpretation of them was. That statement cites the manufacturing margin, or the margin between the price of a pound of cotton and the manufacturer's selling price of the gray cloth produced from a pound of cotton, as an index of conditions in the industry. In this connection, it is stated: "In the summer of 1933 it (the margin) rose, and after full allowance is made for the cotton processing tax the margin at the high point in August was above that of any other time since 1925. . . . Current mill margins are (now) well above those prevailing between June 1931 and May 1933, and are about in line with those prevailing in the early spring months of 1930 and 1931."

This statement completely ignores the fact that the rise in the "margin" in the summer of 1933 was the result of sharp increase in labor costs due to the NRA codes; Department of Labor figures showed a 55% increase in the hourly rate in the cotton textile industry between July 15 and Aug. 15, 1933. That added cost is still in force.

The picture of a manufacturer putting this increased "margin" in his pocket is interesting, but not true. If the AAA wants to get some data on "margins" in the textile industry, it might consult the Federal Trade Commission, whose report shows the industry operating at a loss.

Plan for Prompt Adjustment of Production to Demand

Long-waited action by the NIRB to meet critical conditions in the cotton textile industry was taken March 26 when the Board, on recommendation of its Textile Planning Committee, took steps to adjust available productive capacity in those groups of the industry where necessary to meet the present inadequate consumer demand.

The committee met the issue squarely. Convinced that there are branches of the industry "which cannot continue to run in the immediate future on their present operating schedules," it asked itself the question: "Shall the reduction be made in an orderly and equal way . . . or shall it take place in a haphazard, unequal and extreme form, with prolonged uncertainty and instability and with degree of hardship wholly unnecessary?"

The Board chose the former course and created machinery by which this could be done in the divisions of the industry where it may prove necessary, by temporarily lowering the present maximum hours of operation and number of machines operated. Reductions will be limited to not more than 25% in the maximum hours of operation prescribed in the code or in the maximum number of machines operating in a particular branch or unit during the preceding six months. This will not affect single-shift mills which have operated within six months prior to any reduction of productive capacity. The order is effective for a period of 12 months from the date of the order.

For the administration of the order, there was established a special Research and Planning Committee, three members to be appointed by the Code Authority and one member, who would also serve as a technical advisor, to be appointed by the NIRB. The Code Authority named G. H. Dorr, president of the Cotton-Textile Institute; Paul B. Halstead, secretary of the Code Authority, and W. Ray Bell, president of the Association of Cotton Textile Merchants of New York. The NIRB appointed James P. Davis, who is chief of the textile unit of the Research and Planning Division of NRA.

•

On the Processing-Tax Front

For months, a grim football game has been in progress between Government officials and cotton manufacturers, with the processing tax—"the tax that terrifies"—as the football. Practically every organization of cotton manufacturers in both New England and the South met last month to protest bitterly against the tax and urge emphatically that it be removed.

Just as manufacturers began to feel that continued bombardment was beginning to penetrate official Washington armor, Secretary of Agriculture Wallace, irked, made many a front page by stating that the processing tax might be *increased* instead of repealed or decreased. Also, he expressed disapproval of the proposal to pay farmers out of the national treasury.

One of the plays of the AAA was a five-page statement "explaining" the effect of the cotton tax. It was unanimously agreed that this play was a foul. Certainly, the Administration's statement was shot full of holes by G. H. Dorr, president of the Cotton-Textile Institute.

Senator James F. Byrnes, of South Carolina, introduced an amendment to the agricultural appropriation bill to defer payment of the processing tax until the manufactured product is marketed by the mill. If adopted, this would mean that mills will no longer have heavy capital tied up in processing tax on goods stored in warehouses.

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A.C.M.A. Convention Plans Go Forward

Registration at the Bon-Air Vanderbilt Hotel, Augusta, Ga., indicates that attendance will be large at the 39th annual convention of American Cotton Manufacturers Association April 25 to 27. The president's annual address will be delivered by W. D. Anderson, president, Bibb Mfg. Co., Macon, Ga., Thursday morning, April 25. Other speakers who will be heard that day include Col. Frank P. Douglass, Textile Labor Relations Board; G. H. Dorr, president, Cotton Textile Institute; George A. Sloan, chairman, Cotton Textile Code Authority; and Senator Millard E. Tydings, of Maryland. W. M. McLaurine will read secretary's report.

As announced, merchandising is to be the keynote of the meeting. At the Friday morning session will be a symposium at which Sol Dribben, Cone Export & Commission Co., will discuss merchandising from the standpoint of the commission merchant. Flint Garrison, chairman, Wholesale Dry Goods Code Authority, will present the wholesalers' viewpoint. David Ovens, president, National Retail Dry Goods Association, will speak on merchandising from the retailer angle.

At the Thursday evening fashion show, Miss Katherine Cleveland, Cotton Textile Institute stylist, just returned from Paris, will speak on cotton styles.

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Fabric Tone Weak, Surplus Blamed

With stocks at mills increasing steadily and numerous companies forced to clear at a loss, it was inevitable that the goods market should react favorably to the news that machinery to facilitate curtailment action had been approved by the NRA. The surplus, especially at the gray goods end, has a depressing effect on prices throughout March and indeed the first quarter as a whole was poor.

A stronger sentiment in the cotton yarn market which became manifest toward the end of March, tended to confirm those who insisted the early March cotton break would not cause any lasting upset in yarn levels. Spinners still complained of

price resistance, but many were bullish in refusing to make concessions and to this degree the market showed firmness.

•

National Cotton Week Flash!

Earlier estimates that 30,000 merchants would participate in National Cotton Week, May 6 to 11, now appear conservative, according to latest announcement from Cotton-Textile Institute. It is quite probable that the number will be much larger since many wholesale organizations have undertaken to enlist interest of thousands of smaller dealers who hitherto have not participated.

•

Firestone Buys Loray

The Loray Mills Division of Manville Jenckes Corp., located at Gastonia, N. C., has been sold to Firestone Cotton Mills, Inc., a subsidiary of Firestone Tire & Rubber Co., Akron, Ohio. The mill was closed the first of the year, due to unsatisfactory market conditions, and stock in process run out. It is presumed that the new owners will resume operations, but definite plans have not been announced. Loray has 118,000 spindles, 204 looms, and is equipped for the manufacture of tire fabrics. The mill village and auxiliary structures were included in the sale.

•

Lancashire Spindles

MANCHESTER, ENGLAND.—No details as to the number of spindles offered for scrapping or sealing under the Colwyn Committee's Scheme are yet available. The Colwyn Committee, however, has approached the Government (The Industries and Manufactures Department of the Board of Trade), and they have agreed to draft a bill to legalize the scheme.

•

February Operations

Statistics of particular interest to cotton manufacturers, showing February operations and the raw material situation, were:

Spindle activity	100.2% capacity, or 6,575,356,524 spindle hours
Cotton consumed	478,291 bales
Cotton exported	390,294 bales
Cotton imported	8,137 bales

January operations for comparison:

Spindle activity	102.6% capacity, or 7,510,017,095 spindle hours
Cotton consumed	546,787 bales
Cotton exported	465,711 bales
Cotton imported	7,683 bales

•

Industry Briefs

At the annual business meeting of the Carolina Yarn Association, held March 25 at Greensboro, N. C., the following officers were elected: Bruce Griffin, Charlotte, N. C., president; Henry Stokes, Charlotte, vice-president; J. R. Morton, Greensboro, treasurer; K. C. Loughlin, Charlotte, secretary. Annual golf tournament will be held at Pinehurst, N. C., date to be announced later.

Carding and spinning will be discussed at spring meeting of Eastern Carolina Division, Southern Textile Association, April 25, at North Carolina State College, Raleigh, N. C. The meeting will be opened by M. R. Harden, chairman. Frank Rowe, chief technician, Saco-Lowell Shops, will speak on modern textile machinery and its application to the average mill. D. F. Lanier will lead the carding discussion; and T. W. Mullens will lead the spinning discussion.

An amendment to the Cotton Textile Code has been proposed by the Authority to require on carded yarns a weekly sale and export sale report. Under the amendment, both mills and agents would report weekly to the Cotton-Textile Institute which in turn would issue weekly summaries.

Cannon Mills Co., Kannapolis, N. C., and subsidiaries, showed during 1934 a net profit of $2,570,382 on a dollar volume of $24,191,996. Net working capital at end of year amounted to $19,413,707 as against $19,644,567 at end of preceding year.

•

Cotton Mill News

Lawton Mills Corp., Plainfield, Conn., is installing several hundred new Draper Model X looms to replace older equipment. Last year 432 old looms were replaced and further installations are anticipated.

Poulan (Ga.) **Cotton Mills** will install new equipment to replace worn-out machinery, and will make other improvements in mill for increased production.

Strickland Cotton Mills, Valdosta, Ga., have installed two Universal winders, a number of Whitin Casablancas spinning frames and one high-speed warper.

Page Mfg. Co., New Bedford, Mass., a unit of United Merchants & Manufacturers, Inc., will be closed on or before April 30 for an indefinite period. Some preparatory machinery will be sent to the Argentine for an allied enterprise.

Bloomfield (N. C.) **Mfg. Co.,** a carded and combed yarn mill of 6,944 spindles, idle for two years, has been purchased by J. W. Abernethy, Newton, N. C.

Elk Cotton Mills, Fayetteville, N. C., have replaced ten of the old-model spinning frames with Saco-Lowell long draft equipment.

Spencer Corp., Spindale, N. C., operating in receivership for some months, will be sold at auction April 27.

Consolidated Textile Corp., Shelby, N. C., recently purchased 36 car-loads of machinery from a liquidated Rhode Island mill.

J. E. Barbour-Allentown Corp., Allentown, Pa., affiliated with the Ludlow Mfg. Associates, Boston, Mass., has plans for new seven-story and basement addition to local mill at Gordon and Third Sts., estimated to cost close to $200,000, with equipment. General contract will be let soon. Charles T. Main, Inc., Boston, is engineer.

Reading Towel Mfg. Co., Reading, Pa., has begun erection of a two-story addition to the rear of its mill.

Isaqueena Mills, Central, S. C., and controlling interest in **Courtenay Mfg. Co.,** Newry, S. C., were sold at a receiver's sale for $364,100 to a Mr. Thompson, of Concord, N. C., reported to have been acting for Cannon Mills Co., Kannapolis, N. C., selling agent and principal creditor.

Clearwater (S. C.) **Mfg. Co.** has begun construction of a one- and two-story addition, 105x135 ft., for which general contract was let to the Fiske-Carter Construction Co., Spartanburg, S. C., estimated to cost over $85,000, with equipment. Charles T. Main, Inc., Boston, Mass., is the engineer.

Clover (S. C.) **Mills Co.,** operating in receivership under J. W. Quinn, was offered for sale last month. No bids were received.

Riverside & Dan River Cotton Mills, Danville, Va., are consolidating their card rooms. Gerald H. Mahaffee, formerly in charge of the No. 1 mill, has been promoted to superintendent of the consolidated card room.

Virginia State Penitentiary, Richmond, Va., has set up a 55-loom cotton mill, of which about one-third is operating at present producing goods for State institutions only.

•

Cotton Mill Finances

Net profit (or loss) reported recently by cotton mills follows:

	Year's Profit 1934	Year's Profit 1933
Kendall Co.	$515,967	$955,864
Merrimack Mfg. Co....	137,102	251,297
Suncook Mills	*47,408	121,677
Cosmos Imperial Mills..	184,267	102,026

*This figure is a loss.

COTTON IN THIS ISSUE

	page
Regain World Markets With Cotton Bounty Plan	83
Analysis of Cottons Selected for College Style Show	87
Need for Variable Speed in Ring Spinning	88
"Shooting" the Loom With Slow Motion Pictures	111
Gyrators to Drafts Discussed by Georgia Executives	120
"S" and "Z" Applauded by D-13 at Providence	121
Loop Effect on Cotton Fabric	124
Loom Thread Separators	125
Looms for Sheetings and Fancies	128
Stop Motion for Warpers	128
Card Clothing Tension Machine	129
Improved Bobbin Cleaner and Stripper	129
Molded Spools	130

TEXTILE WORLD'S

Wool Digest

THE appointment of Ernest C. Morse to head up the wool promotion activity promises prompt inauguration and aggressive prosecution of the campaign. Mr. Morse's experience with the New Uses Section of the Cotton-Textile Institute during the first years of that organization represents excellent background for his new job.

The wool industry should heave a sigh of relief that at long last a start really has been made in this vital direction. It is the most important thing that has happened in this division of the industry in many a day.—*Editor.*

E. C. Morse to Direct Wool Promotion Work

Ernest C. Morse

Ernest C. Morse has been appointed director of the wool promotion campaign to be operated by the newly organized Associated Wool Industries. He will begin his duties at once, and he and his organization will have offices in Room 1212 at 386 Fourth Ave., New York, on the same floor of that building as the National Association of Wool Manufacturers.

Mr. Morse organized the New Uses Section of the Cotton-Textile Institute in April, 1927. In June, 1929, he joined the American Bemberg Corp., where he has headed the cooperative merchandising department. Mr. Morse was born in Lebanon, N. H., in 1884 and was graduated from Worcester (Mass.) Polytechnic Institute in 1905. From 1906 to 1918 he was with the Boston office of Westinghouse Electric & Mfg. Co.

In 1918 he entered the Government service in the Construction Division of the War Department. He later engaged in sale of war surplus property. From 1921 to 1927 he held executive offices with the Foreign Trade Supply Co., New York, Triumph Electric Co., Cincinnati, and J. V. M. Dorr Co., New York. He has lived for some years in Larchmont, N. Y.

Mr. Morse's active promotion of the New Uses Section of the Cotton-Textile Institute and his facility in addressing trade meetings brought to that function of the Institute a high degree of success.

His work in the wool field will be broader in scope, including not only new uses but promotion of uses already the backbone of the trade. The movement is backed by wool growers, dealers and manufacturers. The executive committee of the Associated Wool Industries, of which Arthur Besse is chairman, has retained B. M. Nussbaum, president of the United Advertising Agency, as its promotional counsel.

Fall Men's Wear Moves as in Old Times

The men's wear situation for fall has a good background and sellers generally took constructive action in setting prices par to 15c higher than spring opening levels despite temporary weakness in wool. Buyers' response has been encouraging. One important mill priced its fall goods on March 19 and withdrew them on March 20 as a protective measure for customers who had not had time to visit the market. Activity has almost equalled old standards.

Not only are retailers' stocks light but the future seems well stabilized with a reduced domestic clip and recent placing of government business which alone will require nearly 10,000,000 lbs. of wool, grease basis. It is recognized that some clothiers deliberately overbought with expectation of having orders scaled down, but this shows an attitude quite different from the fearful caution of last fall. Government bids ranged from $1.76 to $2.37 on 32 oz. overcoatings (1,047,000 yd.) and from $1.53 to $1.984 on 20 oz. suitings (2,766,000 yd.). The full quantity on the latter was available at under $1.70 net. The Army also opened bids on 218,000 new-type 3½-lb. blankets made from a blend of 56s to 60s wools; prices were $3.99 to $4.80.

Spring deliveries which in theory should be completed by April 1 were still being made at that date and buyers were not cancelling. The fact that distributors' shelves were nearly bare is a strong element in supporting both spring and fall.

Women's wear prices are steady in face of slow demand. There is room for missionary work in this field if wool goods recent successes here are to be repeated in the future. Several attractive new lines are in the field and their success will doubtless have a helpful effect on the whole market.

•

Wool Deflation an Assurance of Stability

That wool operations are being conducted on a price basis deflated of those influences which in 1933 carried all commodities skyward on a wave of optimism is construed as highly favorable to the security of the wool position as affecting growers and dealers alike. The decline in the price of wool from a year ago at this time has been substantial, approximately 28% in the territory group which may be regarded as the barometer of the domestic price situation. An upward move when time becomes opportune seems more probable than any break to a lower level on domestic wool.

Meanwhile, the steady absorption of native-grown wool at around current price levels seems about the best that can be anticipated under prevailing conditions, although foreign markets at this time are pointing upward.

•

Tops Have Been Steady

The wool top market held generally steady through March when several other commodities were notably weak. Top futures moved in a narrow range, the September contract for example having a high-low of 74.9 and 73.9. Spot tops opened the month at 79c., went to 81c. from March 8 to 15, eased to 79½c. and closed at 80c.

•

Rags Hold Firm

Unlike the wool situation where dealers' stocks have been heavy and mills' stocks light, rags and reworked wool are in scant supply on the distributing market but fairly heavy in mill hands. Even though raw wool has eased a bit under the more pliable arrangement worked out for the setting of government figures, wool substitutes remain fairly firm. Mixed soft woolens are at 13c., fine light merinos 21½c., dark worsteds 8½c., rough worsteds 4¾c. New clips have had a narrow market. Sweater clips are dull and white has sold at 50c.

•

Activity of Industry

Current statistics on wool consumption and mill activity follow, the activity percentage being based on single 40-hour shift, 5½ days per week. Increases in all except carpet lines are shown:

Wool consumed:	January	February
Total clean equiv. (excluding carpet)	22,196,000	19,328,000
Carpet wool (grease)	5,948,000	5,980,000
Looms (50" wider)	102.2%	111.4%
Carpet looms	45.7%	56.9%
Combs	123.8%	110.8%
Worsted spindles	91.7%	88.4%
Woolen spindles	109.6%	117.8%

•

Wool Items Among Those Showing Gains

Growing competition among textile fibers for the consumer dollar was stressed in the second lecture of the Philadelphia Textile School—Wharton School Series given by H. S. Davis of the Industrial Research Department of the Wharton School, University of Pennsylvania, on March 14. Mr. Davis said that production of woven fabrics for apparel purposes wholly or in part of rayon was second in square yards only to the production of all-cotton fabrics in 1933, out-ranking the production of both all-wool and all-silk woven apparel fabrics. In the women's wear field, rayon fabrics and fabrics wholly or partly of wool were noted as the only classes of women's fabrics to increased production in 1933 over 1929.

Of the various yarns purchased by knit-

ters, only their consumption of rayon and worsted yarns showed an uninterrupted upward trend from 1925 to 1931. Outside of yarns for knitted outerwear, the wool textile market made its best showing since the war in wool blankets yarn market. Measured in square yards, production of blankets made in the wool industry increased more rapidly over the period 1919-1933 than did production of blankets in the cotton industry.

•

Goodall Seeks Exemptions From Men's Clothing Code

Goodall Co., was the principal on March 18 at a Washington hearing it had requested relative to exemption from certain wage provisions of the men's clothing code in its plants for making up Palm Beach clothes. Contention was that these garments were in closest competition with the cotton summer clothing made under exemptions from the men's clothing code or made under the cotton garment code. There were witnesses on both sides of this question. Some stated the Palm Beach suits were highly competitive with summer worsteds. It was stressed by witnesses for Goodall that Palm Beach suits were wash suits in distinction from the usual products of the men's clothing industry.

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Wool Textile Code Notes

Blanket division has held hearings on amending merchandising rules to remove time limitation on guarantee against price decline on firm orders, although not to extend beyond date of delivery, to delete requirement for price registration and to permit shipments f.o.b. mill or established warehouse with free delivery within city limits of either.

Ruling by NRA that chains and group buyers could be classed with independent retailers as individual companies and so entitled to volume discounts, is said to have relation to application of such discounts under the carpet and rug code, although some carpet men allege that the ruling cannot be applied under their code.

Piece goods selling division has been asked to consider an advance of the seasonal dating on women's wear so that shipments of fall goods during April, May and June will be invoiced as of July 1 at 1% 10 days, net 60; also shipments in October, November and December, 1% 10 days, net 60, Jan. 1; shipments in other months, no dating.

A new Section 9, Article II of the merchandising rules is being offered. It concerns the arbitration of disputes under contracts for sale of piece goods and makes the provision more binding, but without other essential change. Hearing will be held in Washington, April 18.

•

Wool Industry Briefs

Dr. **Henry Moscowitz,** impartial chairman of the Textile Refinishers Association, took part recently in a radio program to acquaint women with the work of the group and the necessity of using only preshrunk goods in women's clothes.

The annual meeting of the American Woolen Co. on March 26 at Springfield was enlivened by a resolution calling for cancellation of the salary bonus arrangement between the company and its three principal officers. The resolution was ruled "out of order" and merely recorded. Discussion by the 11 stockholders personally present centered on the reduction of quick assets since 1930 and the bonus arrangement.

The Canadian wool textile industry should have adequate protection against the lower wages and overhead in the mills of the United Kingdom, according to findings of the Canadian Tariff Board. Despite this, recent changes in tariff schedules are in effect, a lowering of preferential rates on some items.

Pulled wool from AAA-slaughtered sheep in Utah has been made into blankets by mills at Murray and Brigham City and turned over to the surplus relief corporation. Over 10,000 4-lb. blankets have been made, with 15,000 more in sight.

The largest quantity of wool cloth exported in January to any one country went to Peru. It was valued at $19,609. The largest quantity imported came from the United Kingdom. This was valued at $432,845. Japan shipped in only $1,155 worth.

"Coolaine," a worsted fabric of unusually light weight, has been developed by Forstmann Woolen Co., and is being given nationwide promotion for women's summer apparel.

R. L. Studley was last month reelected president of the National Wool Trade Association. The other official personnel was also reelected.

Employment in the wool textile industry last February was 99.7 (1929 average = 100) against average for 1934 of 78.1. Payrolls for February were 82.4 against average for 1934 of 58.5.

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Wool Mill News

Adams-Swirles Cotton Mills, Macon, Ga., has been purchased by **Uxbridge** (Mass.) **Worsted Co.** for $40,000 from First National Bank of Chicago, holder of the stock. The mill at Macon will be remodeled and put into operation at once.

Rowayton (Conn.) **Carpet Mills, Inc.,** has been formed to manufacture carpets, rugs and mats, operating in a factory building formerly used by a carriage wheel manufacturer. S. R. McGimsey, J. F. Sayles and Harriet S. Martin head the corporation.

LaPorte-Daniels Woolen Mills, Inc., LaPorte, Ind., referred to last month, has been incorporated.

Nornay Worsted Co., Inc., Barre, Mass., will sell its spinning equipment and, in conjunction with the Barre Wool Combing Co., concentrate on top making.

Daniels Mfg. Co., East Brookfield, Mass., wool manufacturing plant, has been dismantled.

Clark Woolen Mill, Leicester, Mass., idle for some months, is about to be purchased and started up with 90 operatives, according to local report.

E. G. Carlton & Sons, Rochdale, Mass., mill property has been transferred to Edward P. Leveen, New York, who, it is said, will reopen the plant.

Firth Carpet Co., Firthcliffe, N. Y., are installing a complete gravity-type filtration and water softening system made by Hungerford & Terry, Inc.

Newton Woolen Mills, Inc., Homer, N. Y., have been formed with capital of $20,000 to operate a local mill. New company is headed by Jesse C. Newton and Randolph V. Miller, both of Homer.

Asheville (N. C.) **Hand Weavers Guild, Inc.,** has incorporated to operate a woolen weaving plant. Eugene and Mary Gilmore (Brooklyn, N. Y.) and Joseph and Bertha Enwright (Asheville) are subscribers to the capital stock.

Keystone Spinning Mills Co., carpet yarns, Philadelphia, will liquidate, according to Charles Newkirk, secretary.

Texas Woolen Mills Corp., San Angelo, Tex., care of M. C. Cotton, 202 Burt Building, Dallas, Tex., recently organized by Mr. Cotton and associates, has plans maturing for new mill at San Angelo, Tex. It will consist of several units, with power house, etc., and will be equipped with about 7,000 spindles and 100 looms. Project will cost over $400,000, with equipment. E. B. Boyd, 1806 Twentieth Ave., South, Nashville, Tenn., is engineer in charge.

Knight Woolen Mills, Provo, Utah, will have to move if the proposal that its site be used for the local post office goes through. The plant is only one block from the intersection of the town's two principal streets.

Guelph Carpet & Worsted Spinning Mills, Ltd., Guelph, Ont., has just placed in operation a number of new carpet looms.

Lannigan's Woolen Mills, Charlottetown, P.E.I., operated by the William Condon Co. have preliminary plans under way for rebuilding of four-story mill, recently destroyed by fire. Loss reported close to $40,000, with equipment.

Renfrew (Ontario) **Woolen Mills, Ltd.,** are planning to install two sets of four-cylinder 60-inch tape condenser woolen cards and four mules, each of 300 spindles, according to J. J. Southern, plant manager.

WOOL IN THIS ISSUE

	page
Need for Variable Speed in Ring Spinning	87
"Shooting" the Loom With Slow Motion Pictures	111
D-13 Wool Sub-Committee Reports	121
Improved Carbonizer and Stock Dryer	129
Card Clothing Tension Machine	129

TEXTILE WORLD'S

Rayon Digest

HERE is a sample of the sort of thing that makes an editor's life a short but merry one:

Dear Mr. Editor,

I have been waiting for Jack Card to come across with a generic term for the synthetic yarns and cannot imagine why he has failed to furnish something suitable—or at least debatable—before now. The inconvenience and awkwardness of the present practice certainly must be apparent to your inventive correspondent. As a stimulus to his imaginative power, I am proposing tentatively, as Committee D-13 would put it, three names—one for each of the three types of synthetics. They are: Viscofil, Acetafil, Cuprafil. Nitrofil no longer is necessary.

With these as a start, perhaps Jack Card, or one of your other constant readers, can compound an all-inclusive term. It must, however, be better than Synthefil.

Yours admiringly,

PEARL STITCH.

This is Jack Card's problem, not ours.—*Editor.*

Lull May Bring Yarn Curtailment

Continued slackening of yarn sales through March brought the industry, at the start of April, to the point of considering possible curtailment. There was no feeling that immediate action was necessary, but producers thought that unless sales showed a decided pick-up within a month, it would be necessary to reduce production.

At present, stock position is satisfactory enough. Despite the light buying of recent weeks, leading producers still have only about three weeks supply on hand. Indeed, there is a shortage of certain 300 denier and 150 denier yarns. Taking the picture as a whole, stocks in producers' hands are above what they were a couple of months ago, and producers recognize that inventory will call for careful watch during the next few weeks.

Weavers did little buying and much complaining during March, the chief agitation being about the "bar effect" sheers. Certain rayon yarns proved unsatisfactory when used in constructions to which they were not suited and much dissatisfaction resulted. Producers are inclined to deprecate the complaints, contending that there is a disposition among some weavers to use this as an excuse to evade acceptance of contracted stocks.

•

Rayon Weavers Curtail

The problem of accumulating stocks which became acute in the woven rayon fabric industry during March, is now being solved through voluntary curtailment. Leading companies began to restrict their operations in mid-March, some cutting production 35% to 45%. There was considerable agitation in the industry for official curtailment through the NRA, but when reports presented at a meeting March 26, of the National Rayon Weavers Association in New York, showed that voluntary curtailment was becoming effective, the proposal for mandatory action was dropped.

•

To Resume Inquiry

Hopes that the Federal Trade Commission's investigation of certain rayon producing companies might be discontinued spread rapidly through the industry following settlement of the suit by Arcadia Knitting Mills against The Viscose Co.—only to be officially contradicted later by the Commission. It was stated then that the hearings on a complaint against firms making yarn by the viscose process would be resumed as soon as certain auditing work is completed. This work involves examination of books of rayon knitters and may take several months.

Settlement of the suit for $20,000,000 which Arcadia had instituted against Viscose, was announced March 22 by counsel. Arcadia charged that they had suffered the damages specified due to refusal of Viscose to fulfill a contract and supply yarn at the market price.

Spokesmen for the Commission said definitely that the two matters had no connection whatever and that the long recess in the investigation was due solely to the involved auditing task now under way.

•

Succeeds Morse at Bemberg

Theodore Wood, who has been associated with North American Rayon Corp. for the last year, has been appointed advertising manager in charge of promotion for American Bemberg Corp., to succeed Ernest C. Morse, whose new connection in charge of the wool promotion campaign is announced elsewhere in this issue. Prior to his association with North American, Mr. Wood was for seven years president of Wood. VanderPyl Co., cotton goods commission merchants. Prior to that, he was director of sales for Connecticut Mills and Canadian-Connecticut Cotton Mills, Ltd., and was also identified with Goodyear Tire & Rubber Co. and American Yarn Co.

•

10% Wage Rise

The American Bemberg Corp. and the North American Rayon Corp. on March 29 announced that from April 1 to June 30, wages of hourly paid employes at the Elizabethton, Tenn., plants would be increased 10%. The company hoped that conditions in the rayon industry during these three months would improve sufficiently to warrant making the raise permanent.

•

Du Pont Pushes Plans for Argentine Plant

South America loomed large in rayon interest during the month, due to two important developments. Plans for the construction of a rayon plant in Argentina by the E. I. du Pont de Nemours & Co., parent of the du Pont Rayon, and British and French interests, which were announced in these columns last month, are being pushed forward steadily. Frank S. MacGregor, former general manager of the Acele department of the du Pont Rayon Co., has been appointed general manager of the Argentine rayon company which will be known as "Ducil." Mr. MacGregor has been in South America for some time making arrangements for the plant which is to be built near Buenos Aires.

Shortly after the du Pont development came the news that negotiations were under way for sale of the nitrocellulose yarn plant of the Tubize Chatillon Corp. at Hopewell, Va., to South American interests and the transfer of the equipment to Sao Paulo, Brazil. R. W. Scott, chairman of the executive committee of Tubize said such negotiations were under way but that no decision had been reached.

•

Slippage Test Planned for Silks and Rayons

At the Providence meeting of Committee D-13 on Textile Materials, American Society for Testing Materials, March 14, the following tentative test for slippage was submitted by H. A. Mereness, technical director, National Federation of Textiles:

(1) The sample is prepared by sewing with 00 white mercerized cotton thread, 14 stitches to the inch, two pieces of the cloth, one 4 by 4 in., the other 4 by 8 in. across one 4-in. end, ½-in. from the end. The 8-in. dimension is across the warp so that the slippage is that of the warp threads on the filling threads*. It is important that the stitches be made under uniform tension, and as nearly perpendicular to the filling threads as possible. (2) Five sam-

ples shall constitute a test. (3) All samples shall be conditioned for at least 4 hr. at 70° F. and 65% relative humidity before testing.

(4) The machine used is the Scott serigraph, or similar machine, with standard chart attachment. Maximum capacity 25 kilos, or 50 lb. (5) An auxiliary device is a 6-oz. clamp used to hold the sample taut and under small tension in the jaws of the machine when fastening the lower jaws of the machine. (6) The speed of the serigraph is 6 in. per min. Both jaws are 2-in. wide. The jaws are spaced 3 in. apart, and the sample so placed that the seam is 1½ in. from each jaw. The sample is clamped in the upper jaws, is pulled just taut (by means of the 6-oz. clamp) with the needle registering at zero, and the lower jaws of the machine clamped securely. (7) All elongation curves (made on the 8-in. part of the sample) are started from the zero-sero point on the chart. Three are run; and if they check closely, the average is used. (8) Run one slippage test (using the 4 by 4 part of the sample and the upper 4 by 4 part of the 8-in. piece) from a numbered centimeter line on the chart. (9) Calculate the pull required to get a slip of ¼ in. each side of the seam, or the equivalent, a ½ in. slip on both sides.

(10) One method of calculating results: (*a*) Trace on a thin sheet of paper the average elongation curve. (*b*) Determine the compensation at 1 kilogram by subtracting the height of the elongation curve at 1 kilogram from the actual curve obtained when testing the sample. To this compensation add ¼ in. (i.e., ½ in. slip at a 2:1 ratio on the chart). ** (*c*) With a pair of dividers set at this compensation plus ¼ in. and with the elongation curve covering the actual curve, follow up the elongation curve until the dividers touch the slippage curve, measuring parallel with the lines indicating kilograms. At this point you will have the force in kilograms necessary to cause a slippage of ¼ in. in the goods, based on 2 in. of sample. From this reading the compensation used is subtracted, giving the actual slippage figure.

*Unless less force is required to slip the filling threads on the warp threads, in which case the 8 in. dimension is across the filling.

**Compensation at ½ kg. used for samples slipping under 10 kilos, and a 1 kg. for samples slipping above 10 kilos.

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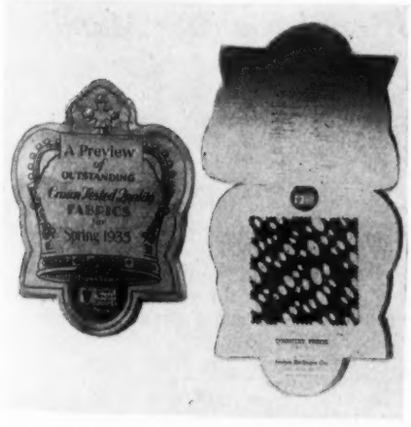
Ask Code Change On Trade Practices

An amendment to the converting division of the cotton textile code relating to textiles made entirely from synthetic yarns or from synthetic yarns mixed only with silk, has been submitted to the NIRB by the Cotton Textile Code Authority. It provides that such plants may follow the applicable provisions of the silk textile code.

Clarifying the amendment, April 4, the NIRB pointed out that this would not place manufacturers in this class under jurisdiction of the silk textile instead of the cotton textile code, but that it would permit manufacturers to sell their product under the applicable sections of the silk textile code. The amendment will make all trade provisions of the silk textile code applicable to the shirtings and wash goods converting divisions which previously had been under the silk code only as regards terms of sale and deliveries.



Resplendent in the guise of a gilded shield, the swatch card completely loses its former lowly identity in this interesting presentation by the Viscose Co. The booklet comprises outstanding Crown-rayon fabrics of spring, these being shown with complete test reports of each fabric as submitted by the Better Fabrics Testing Bureau.

RAYON IN THIS ISSUE

	page
Pebble and Take-Up Set by Throwster's Soaking	94
"S" and "Z" Applauded by D-13 at Providence	121
Streaks in Acetate	124
Rayon Creping Unsatisfactory	125
Loom Thread Separators	125
Looms for Fancies	128
Stop Motion for Warpers	128

(There is much rayon material in knitting section beginning on page 95)

Spun Rayon Paragraphs

Market prospects for spun rayon promise to be considerably improved and widened by recent improvements in spinning the yarn. Recent advices from Europe tell of developments which, it is claimed, can give spun rayon yarns as great if not greater dry strength than the equivalent cotton yarns.

Install Test Unit—With the aim of studying the merchandising possibilities of the staple fiber and spun rayon yarns at first hand, the Viscose Co. is installing a small viscose process staple fiber unit at its Parkersburg, Va., plant. Spokesmen for the company made clear that the project is strictly on an experimental scale.

Shirting 100% spun yarn—D & J Anderson, Ltd., leading British shirtings manufacturers, have just developed a shirting made entirely from Courtaulds "Fibro." The fabric at present is being offered on a very limited scale.

Courtaulds, Ltd., will erect a new viscose yarn plant for staple rayon production at Preston, England, which will add another 30% to their output, it was made known at the firm's annual meeting, in London, last month.

•

Industry Briefs

Cellulose Patents (International) Ltd. has just been formed in London, England, with a nominal capital of £80,000 (about $400,000). The firm will "enter agreements with Jac C. de Nooij, Dirk Jan Gerritson and Enrico F. Jucker to acquire any inventions or secret processes relating to an improved process of preparing cellulose solution and process of producing artificial threads."

Courtaulds, Ltd., London, has widened the men's wear possibilities for rayon by offering a new rayon sports shirt woven of dull viscose and cotton yarns. The price of the shirting is controlled throughout by Courtaulds; the garment itself retails at about $2.75.

Floral honors—Again this year the horticultural exhibits entered by Samuel A. Salvage, president, Viscose Co. in the New York Flower Show have won first honors. Mr. Salvage won 25 awards in all, 10 first, 9 second and 6 third prizes.

German foreign trade in rayon declined decisively in 1934 as result of the Government's new policy. Imports last year were 10% below the previous year. The nation has been trying to cut rayon imports to save foreign exchange for other raw material purchases.

Output of rayon in the United Kingdom in January, 1935, totaled 10,120,000 lb. against 8,460,000 in the same month last year and 7,860,000 lb. in December, 1934. The highest previous total was 9,000,000 lb. in October, 1934.

•

Rayon Mill News

Gloucester Rayon Co., Gloucester City, N. J., has been chartered under Delaware laws with capital of $85,000 and 4,000 shares of stock, no par value. At request of representatives of this firm to succeed Furness Corp., Judge Airs in Camden, N. J., March 23 announced a postponement for three weeks of the hearing on final approval of the reorganization. This also deferred election of directors and officers of the new firm.

Gossett Mills, Anderson, S. C., are building a one-story addition, 64x105 ft., to be used for rayon division, centralizing the production of this branch at Anderson. New unit will cost close to $50,000. General contract was awarded to the Daniel Construction Co., Anderson.

•

Rayon Financial Reports

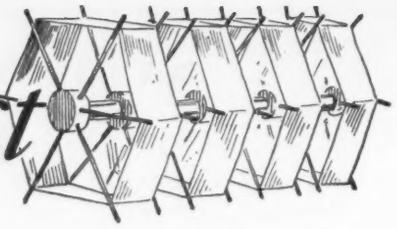
Net profit (or loss) reported recently by rayon producing companies follow:

	Year's Profit 1934	Year's Profit 1933
Tubize Chatillon Corp.	*$293,402	$309,565
Celanese Corp. of America	3,229,458	5,453,903
Skenandoa Rayon Corp.	76,174	138,999
Canadian Celanese, Ltd.	1,504,708	1,260,864

*Indicates loss instead of profit.

TEXTILE WORLD'S

Silk Digest



WE have been an enthusiastic supporter of the International Silk Guild from its inception. We have regarded its promotional activities as constructive and important. There is still too little of this type of effort in the textile industry.

Consequently, we regret all the more the slightest tendency for such a movement to get off the track since it imperils the chances of cooperative textile promotion in general. We refer specifically to the destructive tone which crept into one piece of advertising copy released by the Guild. By thinly veiled inference, the synthetic fiber industry was put on the spot.

"There is no substitute for silk, and silk has no successor. . . . What artificial flower has ever held man spellbound with its waxen loveliness? . . . What man-made stone has ever rivalled the luster of the pearl? . . ." These are a few of the negative statements. Even more subtly disagreeable are these: "And still, perhaps, the Gods are not displeased. For through his imitative efforts man has brought much happiness to humble homes. . . . Throughout the ages there have been trying times when men have had to content themselves with lesser things. . . ."

In the long run, such comments are not going to hurt the synthetic industry. But they *will* hurt silk. This type of advertising always proves a boomerang.

Subsequent advertisements released by the Guild abandoned this tone. It is to be hoped that the lesson was learned. There is plenty of a positive nature to say about silk, without the necessity of knocking another group of fibers.

And, from a purely practical standpoint, it must be remembered that the "silk" manufacturers use both silk and rayon—especially rayon. Since they are helping to finance this campaign, we do not imagine they will enthuse over the use of their money to disparage one of the materials they themselves offer to the public.—*Editor.*

Silk-Rayon Wage Revision Asked

The long-discussed issue of wage differentials between rayon weavers operating under the cotton code and rayon weavers operating under the silk code came to a head April 2, when the Silk Textile Code Authority formally petitioned the NIRB to make the labor and trade practice provisions of the silk code identical with those of the cotton code.

In its resolution, the Code Authority claimed that 45% of the rayon yarn used by weavers is consumed by firms operating under the silk code and 55% by those under the cotton code. This claim contradicts recent figures issued by the National Rayon Weavers Association, which showed that weavers operating under the cotton code used 77% of the rayon weaving yarn. The Weavers' Association gave their 1934 yarn consumption total as 99,275,027 lb. out of 127,658,240 lb. which was the total sold by the producers to weavers.

Emphasis on the competitive factor involved in the differential between wages paid rayon weavers under the cotton code as against those paid under the silk code, highlights a report made public last month by the Bureau of Labor Statistics of the Department of Labor. The report presents conclusions reached by the Bureau following a study of wage rates and weekly earnings in the silk and rayon goods industry, April, 1933, to August, 1934. The fact that certain so-called "silk" mills have been placed at a serious disadvantage by paying their rayon workers the silk code minimum while other rayon manufacturers pay their workers the cotton code minimum is termed by the Bureau "one of the most difficult problems which must be faced." Concluding its report the Bureau cites the Silk Code Authority's proposal that either "silk" mills making rayon fabrics pay the lower scale or that "cotton" mills making rayon fabric pay the higher scale.

•

Silk Hopeful Despite Price Dip

The weakening in raw silk which began with the turn of the year showed no signs of halt during March, with the result that crack double extra 78% 13/15 white, which had been selling at $1.43 on Feb. 25 was down to $1.35 on March 25. The last week of March found the situation unchanged and importers were far from certain about the current month. Probably the brightest side of the picture is the fact that neither knitters or weavers have any stocks on hand, and even a slight pick-up in broadsilk sales assuredly would bring a sympathetic activity in raw silks.

Despite the wavering of silk since January, there is still a degree of confidence underlying present fluctuations. Importers do not look for any radical movement in their favor, but neither do they expect the weakness of the last couple of months to continue indefinitely. However, they agree that the immediate outlook in both weaving and knitting divisions is difficult, if not impossible, to read.

•

Van Horn Renewal Brings Praise

In announcing that Peter Van Horn had accepted a contract to continue as president of the National Federation of Textiles until July 1, 1936, G. H. Conze, vice-president of the Federation and chairman of its finance committee, paid warm tribute to the work done by the federation's president during his incumbency. Mr. Van Horn, who was formerly president of the National Association of Better Business Bureaus, was elected chairman of the Silk Textile Code Authority, and vice-president of the federation on March 1, 1934; he became president of the federation on the resignation of Paul C. Debry last July.

Under Mr. Van Horn's leadership the organization completed its transition from the old Silk Association of America to the new federation and all divisions of this $600,000,000 industry were welded together in the new body. The president's work in harmonizing the units and building the new organization was stressed by Mr. Conze in expressing the industry's approval of Mr. Van Horn's achievements.

•

Would Register Metals

Impressed by the beneficial effect which NRA protection has afforded fabric designs through registration, the Textile Division of the Fashion Originators Guild voted last month to ask an amendment to the silk textile code which would make compulsory the registration of domestic designed and manufactured metallic fabrics. It was also proposed that Guild members should charge 10% for cuts of 15 yards or less to the dress manufacturing trade. These actions were taken at a meeting at the Hotel Pennsylvania, New York.

•

Ask National Parley

There were two notable developments during March in the labor situation in Paterson, N. J. Answering a proposal made by the Paterson district of the American Federation of Silk Workers that a conference be held as a move

toward stabilizing conditions in the district, the Silk Manufacturers Association stated that it would enter such a conference only if the meeting was on a national basis with manufacturers and workers of all sections represented.

The causes of the strikes in silk manufacturing and dyeing divisions last fall were analyzed in a report submitted to Mayor Hinchcliffe of Paterson by the Mayor's Fact-Finding Committee. The chief feature of the report was the proposal that a Board of Appeals be formed to act in labor disputes.

•

Silk Stocks Rising

Raw silk imports dropped, deliveries to mills rose moderately, and warehouse stocks showed a marked increase in March as compared with February, according to figures made public by the Planning and Research Bureau of the National Federation of Textiles, Inc. Key figures in bales follow:

	Imports	Approx. Deliveries	In Warehouse End of Month
March, 1935	32,203	44,347	36,583
Feb., 1935	41,943	41,732	48,727

•

Hat Velvets Active

The fashion stress on velvet for the newest millinery has given considerable impetus to movement of the better quality pile fabrics, New York factors report. The emphasis Paris has placed on velvet for Easter and early summer hats has served to accentuate the importance of these fabrics in apparel generally, resulting in increased sales. The new style includes velvet-faced hats and hats trimmed with velvet ribbon, flowers and leaves.

•

Fabric Surplus Rises As Sales Shrink

Demand for broadsilks, which had been none too good during February shrank to an almost negligible point in March and the beginning of April found manufacturers struggling to explain the poor season. The lull had spread through practically all lines, bringing in its wake the inevitable price weakening and unloading of distress goods. However, the distress dumping was less than might have been expected due to the fact that some mills had already begun to curtail production. When stocks continued to rise at the end of the month, numerous factors said they doubted that voluntary curtailment would solve the problem; it was felt that code authority action would become imperative if demand did not pick up soon.

•

Industry Briefs

Appointment of Fred L. Johnson, as general sales manager of Belding-Heminway-Corticelli Co., with headquarters in New York, is announced. Mr. Johnson was formerly sales manager for that company in the Chicago district.

The Story of Silk is told in an article by Donald D. Leonard which has been reprinted by the International Silk Guild for trade distribution. The article, handsomely illustrated by many unusual Japanese photographs, originally appeared in *Natural History*, a journal of the American Museum of Natural History.

An amendment to the silk textile code which writes into the text of that document the standard non-partnership, non-liability clause for protection of members of the Code Authority has been approved by the NRA. The silk textile Code Authority on March 17 applied to NRA for approval of its budget of $106,-910 for the year 1935.

Velvet Budget—Application for approval of a $16,000 budget for 1935 has been filed with the NRA by the Code Authority of the Velvet Industry.

Peace Reigns—Operations at the Allentown (Pa.) Silk Co. became normal last month following settlement of a strike which had disrupted activity for some weeks. The company agreed to a new wage basis which would make $15 the minimum per week for weavers with one loom and $18 for those with two looms.

Oscar Heineman Corp., Chicago, announces that its Chattanooga (Tenn.) representative, C. D. Gott Co., has removed to 704-5 Provident Building.

•

Silk Mill News

Rossie Silk Throwing Mill, Noank, near Hartford, Conn., was sold at auction last month and expectation is that it will be started up on weaving.

Haskell Silk Mill, Westbrook, Me., will soon be reopened if the campaign of Ralph W. Haskell, former superintendent of the mill, for funds is successful.

Myers & Fennette, Newmarket, N. H., has been negotiating to buy the property of George H. Gilbert Mfg. Co., Gilbertville, Mass., idle for several years. It is believed the plant will operate on silk and rayon manufacture if the deal goes through.

Domestic Silks, Inc., 463 Seventh Ave., New York, N. Y., are beginning superstructure for mill at Hattiesburg, Miss., to be one-story, 140x270 ft., estimated to cost over $80,000, with equipment. New structure will be owned by the Silks Building, Inc., a municipal organization formed for this purpose, and will be occupied by Domestic Silks, Inc., under long-term lease. Erection of new unit will be under direction of Oden & Glenn, Hattiesburg, contractors. E. C. Hearon & Son, Hattiesburg, are architects.

Henry Doherty Silk Co., Clifton, N. J., has been chartered under state laws with capital of 1,000 shares of stock, no par value, to take over and succeed to the company of same name, with local mill on Main Ave., which has been in financial difficulties.

Atlantic Silk Co., Paterson, N. J., has been chartered with capital of $25,000 to manufacture silk piece goods, rayons, etc. New company will take over and succeed to the organization of same name with mill at 48 Straight St.

Lebanon (Pa.) **Mills, Inc.**, have completed plans for construction of an addition to cost $150,000 with new machinery and equipment. Plans provide for a unit with 20,000 square feet of floor space, to permit a 20% increase in the company's personnel. Construction work is to start soon.

Adolph H. Klein, of Klein Brothers, New York, silk manufacturers, has purchased the Armstrong plant at Bedford, Va., for $25,000 and will move his Pennsylvania mill to Bedford after the plant has been remodeled. Labor troubles in the Pennsylvania mill are said to have caused the move. The firm also has a plant in Rhode Island. Resident labor is to be used in the Bedford plant, and it is expected that between 150 and 200 persons will be employed.

Blackstone (Va.) **Weaving Co.** is building an addition to house 144 new looms.

Frank Ix & Sons, Inc., Charlottesville, Va., have plans under way for one-story addition to mill on Ware St., to be equipped to increase present output more than one-half. Cost over $45,000, with equipment. Elmer E. Burruss, Charlottesville, is architect. Capital stock of the company has been increased from $250,000 to $500,000.

Windsor Silk Mills, Ltd., Huntingdon, Que., have begun operations in local plant, recently established, and plan early installation of additional equipment in different departments.

Silks, Ltd., 100 Wellington St., West, Toronto, Ont., have leased portion of former automobile plant of Willys-Overland Co., Ltd., on Weston Rd., totaling about 13,000 sq.ft. floor space, and will improve and equip at once for new mill.

•

Silk Financial Reports

Net profit (or loss) reported recently by a number of silk mills follow:

	Year's Profit 1934	1933
Sidney Blumenthal & Co.	*$1,031,483	*$164,126
Century Ribbon Mills, Inc.	103,374	157,445
H. R. Mallinson & Co.	*187,706	*239,076

*Indicates loss instead of profit.

SILK IN THIS ISSUE

	page
5,000 Retail Stores in Nationwide "Silk Review"	86
Influence of Twist on Silk Yarn Characteristics	90
"Shooting" the Loom with Slow Motion Pictures	111
"S" and "Z" Applauded by D-13 at Providence	121

TEXTILE WORLD'S

Knit Goods Digest

WE quote from one of our previous editorials:

"We recommend to the several branches of the industry that their associations be encouraged—in fact, ordered—to devote the major part of their effort during the next year to the development of open forums on the broad subject of employer-employee relationships."

Consequently, it has been a source of great satisfaction to see a series of articles on "Industrial Relations" appearing in the *Institute News* of the Underwear Institute. This series is being prepared by a department of the Institute devoted specifically to that problem.

This is certainly a step in the right direction.—*Editor.*

Philadelphia Events Chief Market Topic

Market attention in the hosiery and underwear divisions was focussed this month on the double program of the National Association of Hosiery Manufacturers and the Underwear Institute, planned for the week of April 22 to 26 in Philadelphia, in conjunction with the Knitting Arts Exhibition. Comments by trade factors in Worth Street indicated that attendance at the various events to be held at the Commercial Museum would be well above that of other years. Underwear manufacturers who previously had been disposed to regard the Knitting Arts Exhibition with only moderate interest, definitely put the event on their calendar this year, this move of course being due to the fact that the Underwear Institute will hold its annual convention there in conjunction with the Knitting Arts Show. See section beginning on page 95 for details and see index on page 141 for other knitting features.

•

Navy Hosiery Outlook

Possibilities of the vogue for navy blue hosiery extending to the 1935-1936 season were being discussed this month by manufacturers. The navy blue hosiery sales have been especially good during the winter just passed and the call is extending into spring, retailers report, but they do not look for it to carry into the warm months as a volume line. The navy blue vogue succeeded the vogue for gun metal which in turn followed dark brown; some trade factors feel that the blue may already have run its course though it is expected to pave the way for high fashion in other dark shades eventually.

•

Knit to Order, Is Hosiery Caution

Both production and shipments of hosiery increased in January, 1935, over the same month in 1934, but the shipment increase was only half of the output increase, according to figures compiled by the Hosiery Code Authority. The January 1935 gain in women's full-fashioned output was 49% against a 25% gain in shipments, others being in somewhat similar ratio. Emphasizing the significance of this in a message in the "News-Letter" of the National Association of Hosiery Manufacturers, Earl Constantine urges the mills to "manufacture only against orders," stressing the danger of running full in the quiet July-August period.

Key January figures from the Code Authority's data follow:

Style	January, 1935 Production-Doz.	%	January, 1934 Shipments-Doz.	%
Women's Full Fash..	1,028,224	49	486,184	25
Women's Seamless...	196,693	24	78,263	10
Men's Seamless.....	874,209	43	609,531	34
Boys' & Infants' Socks	36,873	19	6,844	3
Boys' Golf Hose.....	91,171	70	55,252	36
Cotton Bundle.....	123,557	46	—7,967	— 2
Woolen Bundle.....	12,891	11	—15,568	—17

Comparative hosiery data by dozens of the Department of Commerce follow:

	Knit	Shipments	Stock on Hand End of Month
Dec., 1934.....	6,430,008	6,762,365	12,301,617
Jan., 1935.....	7,549,988	6,518,232	13,475,206

•

"Outs" Take Offensive In Ringless Fight

Developments in the ringless hosiery litigation during March occurred mostly in the camp of the "outside" group which is resisting the efforts of the Textile Patents Corp. to license the industry under the Kaufman patent. Rosedale Knitting Co., defendant in an action instituted by Textile Patents Corp. and Julius Kayser & Co., assumed the role of plaintiff on March 15 by filing suit in the Federal Court, Philadelphia, against 11 leading hosiery manufacturing companies; these firms were charged with conspiring to dominate the hosiery industry.

On April 9, the 11 firms accused by Rosedale of conspiracy, filed denials and brought counter-charges of conspiracy to flaunt the rights owned by the various members of the patent pool.

Details of a protection plan for all "outside" manufacturers, developed by a committee said to comprise officers of Gotham Silk Hosiery Co., Rosedale Knitting Co. and Nolde & Horst Co., were made public March 27. It is understood the protection plan will be adopted by most of the 60 mills of the "outside" group. The aim is to defend unlicensed mills from infringement suits without assuming damage liability and to provide all mills not operating under the Kaufman patent with legal counsel at minimum cost. This service will be rendered by a new company, known as the Federal Patent & Trademark Protection Corp.

•

Ringless Seamless

Several seamless mills are now offering "ringless" hosiery, although it is rumored that in most cases the basis for the use of the term is little more than one of careful hosiery inspection. However, at least two developments point to the definite application of the three-carrier idea to seamless. One is the application for a patent by Paul Krenkel and its assignment to Textile Patents Corp., Philadelphia. (Mr. Krenkel has already secured a Canadian patent.) The other is the development and commercial use of an ingenious three-carrier system by the H.R.H. Silk Hosiery Mills, Inc., Moberly, Mo. The ringless development in seamless hosiery is not expected to reach the proportions of the full-fashioned development, because a large percentage of the former hose is knitted from rayon, which is ordinarily sufficiently uniform to obviate the necessity for three-carrier knitting.

•

New Industry Control Plan for Underwear

A plan of industry control under which wages, hours and the major aspects of business conduct would be covered by contract, is being developed for the underwear industry by Roy A. Cheney, managing director of the Underwear Institute, it became known this month. Mr. Cheney said the plan was aimed to operate irrespective of the constitutionality of the National Industrial Recovery Act.

•

Underwear Status Quo

Underwear production in February, 1935, was almost identical with that of the preceding month, shipments increased slightly and stocks on hand remained about the same, according to figures issued by the Department of Commerce as follows:

	Production	Knit Shipments	Stock on Hand End of Month
Jan., 1935..	1,502,216	1,442,302	3,032,274
Feb., 1935..	1,525,262	1,502,022	3,055,514

•

Pitted Needles

Since the results of an investigation on the causes of pitted full-fashioned needles and sinkers were announced (TEXTILE WORLD, November, 1934, page 96), the authors of the report—B. L. Hathorne, textile consultant, and George Urlaub, Louis Hirsch, Textile Machines,

Inc., both of New York—have received numerous questions regarding certain details of the problem. These questions are answered in a supplementary report issued on March 25. In it the authors point out the necessity for having the silk treated in the same solution as in the mill and wound around the needles or sinkers in the wet state with some 100 turns, leaving the metal bare in spots. Water can cause, accelerate and vary the trouble, although the addition of a small quantity to the test tube serves only to accelerate the test. The needle oils used in the tests did not cause pitting. Further investigation is to be made on several points.

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Machine Study Shows Use Ratios

A study of use percentages which manufacturers obtained from knitting machines during the summer of 1934 has been completed by the statistical department of the Outerwear Code Authority. The study shows that links-and-links power machines had the largest percentage of use. The standing of the various types is illustrated by the following figures made public by the Code Authority: links-and-links power, 62.55%; flat power, 45.3%; circular rib, 42.5%; links-and-links hand, 42.77%; raschel, 40.6%; circular jersey, 38.41%; spring needle, 33.8%; and flat hand, 28.75%.

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Industry Briefs

The Hosiery Code Authority in its second report on compliance since the inception of that work stated that up to Feb. 28 it had received 1,057 complaints of which 776 were adjusted satisfactorily, two were rejected without investigation, 217 involved no violation, and 65 were still unadjusted.

Jantzen Knitting Mills, Portland, Ore., reports dollar sales for 1934 totaled $2,383,550 against $1,881,104 in 1933.

Hosiery leads in the textile expansion in North Carolina, according to the Southern Public Utilities Co., which has compiled figures showing that in 1934 the hosiery industry accounted for 14 new and 16 enlarged establishments in that state.

According to disclosures following the annual meeting, the Mock, Judson, Voehringer Co. has spent $1,500,000 on equipment since 1929; $207,818 was spent in 1934.

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Knitting Mill News

William A. Struthers, San Jose, Cal., is at head of a project to construct and operate a local hosiery mill. Initial unit is reported to cost close to $30,000, with equipment. The San Jose Chamber of Commerce, J. M. Silvery, manager, is interested in the project.

Southern California Waste-Materials, Inc., 480-510 Molino St., Los Angeles, Calif., have changed name to California Mill Supply Co. and have installed a number of Tompkins machines to manufacture certain materials which previously they purchased.

Everrite Hosiery Mills, Tampa, Fla., have started up with 80 knitting machines. E. P. Domb is president. The company formerly operated a mill at Jonesboro, Ga.

Lowell (Mass.) **Hosiery Mills, Inc.,** have been organized with capital of $50,000. William A. Kearns, 54 Orleans St., Lowell, will be president.

Harris Knitting Co., Needham, Mass., has been chartered with capital of $50,000, to operate a mill. New company is headed by Gilbert Harris, president, and Edmund S. Kelley, Jr., 5 Berkeley Pl., Cambridge, Mass., treasurer.

Massachusetts Knitting Co., Rochdale, Mass., has work under way on modernization and improvements at former Rochdale mill of the American Woolen Co., recently acquired for a new plant.

Highland Knitting Co., Inc., Springfield, Mass., recently organized with capital of $50,000, plans operation of a mill. New company is headed by Benjamin L. Bonnel, president, and Robert Cameron, 157 Carver St., Springfield, treasurer.

Wolverine Knitting Co., Bay City, Mich., has moved into larger quarters in order to increase its output.

Camelia Knitting Co. of Detroit, Inc., 130 West Jefferson Ave., Detroit, Mich., has been chartered with capital of $20,000, to operate a local knitting mill. Julius Braun, 3799 Cortland Ave., Detroit, is principal incorporator.

Excello Hosiery Mills, Hawthorne, N. J., has bought equipment of Queens City Hosiery Co., Allentown, Pa., including 20 Einsidel high-speed, 24 and 28-section, full-fashioned machines, which will be moved to Hawthorne, bringing Excello's equipment up to 92 f.f. machines. The Allentown plant was a branch of the Kraemer Hosiery Co. It is understood that $125,000 was paid for it.

Root Mfg. Co., Cohoes, N. Y., has installed 40 additional machines.

Standard Hosiery Mills, Burlington, N. C., are installing 60 new type Banner and Scott & Williams machines, bringing their total to 250. A mill addition was recently completed. The firm also operates 39 full-fashioned machines. The plant is installing a second unit of Inversand water-softening apparatus.

Ridgeview Hosiery Mill Co., Newton, N. C., has awarded general contract for new one-story addition to Herman-Sipe Co., Conover, N. C., reported to cost $25,000, with equipment.

Browning Hosiery Mills, Inc., Chattanooga, Tenn., has purchased **Jacobs-Spivey Hosiery Mills,** Bridgeport, Ala.

Parker Hosiery Mill & Dye Works, Inc., Portsmouth, Va., has purchased additional Banner knitting machines to increase production on boys' hose and anklets.

Lewis Jones Knitting Co., Winchester, Va., recently acquired by New York interests, is being equipped with new machinery, and soon will be manufacturing an improved type of men's cotton underwear, according to John J. Wanner, formerly of Kokomo, Ind., plant manager. Carson L. Spillman, of Winchester, is plant superintendent.

Bear Brand Hosiery Co. will abandon its Hartford, Wis., plant by July 1. The company has already closed plants at Beaver Dam and Waupun, Wis. Several of the 300 Hartford employees have left for Gary, Ind., where the company has purchased a large building. All machinery from the Hartford plant is being transferred to Gary.

Van Dyke Knitting Co., Milwaukee, Wis., is establishing a branch plant on low-priced underwear at McComb, Miss. Part of the machinery of the plant at 2102 W. Pierce St., Milwaukee, is to be moved south. Manufacturing operations in Milwaukee will not be discontinued.

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Knitting Mill Finances

Net profit (or loss) reported recently by knitting mills follows:

	Year's Profit 1934	1933
Holeproof Hosiery Co.	*$330,106	$38,986
Adams-Millis Corp.	648,953	527,448
Real Silk Hosiery Mills, Inc.	*350,760	174,947
Mock, Judson & Voehringer Co., Inc.	200,465	305,754
Proper - McCallum Hosiery Co., Inc.	*187,991	*318,390
Utica Knitting Co.	110,072	612,052
Regent Knitting Co.	28,851	*34,300
Stanfields, Ltd.	119,864	63,350

*Indicates loss instead of profit.

KNIT GOODS IN THIS ISSUE

	page
Guide to 31st Annual Knitting Arts Exhibition	95
Influence of Twist on Character of Silk Hosiery Yarn	90
Advance in Technic Improves Circular Hosiery	99
Style and Quality Lead the Half-Hose Parade	100
Knee Length Among Recent Full-Fashioned Changes	102
Aggressive Effort Brings New Life to Knit Outerwear	104
Corsets of Today—Analysis of Three Knitted Types	106
Abbreviated Shorts for Men Take Market by Storm	107
Simplified Routine for Finishing Jersey Cloth	108
Single Bath Hosiery Dyeing with Sulphon Cyanine	110
Vat Dyes on Jersey	124
Holes in Hosiery	124
Streaks and Two-Tone in Hosiery	124
Dye Not Fast	124
Hosiery Comparisons	125
Hosiery Dyes Unevenly	125
Improved Hosiery Needle	128

TEXTILE WORLD'S

Processing Digest

IMPRESSED by the excellent work which is being done by TAPPI (The Technical Association of the Pulp and Paper Industry), we have for several years toyed with the idea of a similar organization in the textile industry. With the creation of an American Textile Institute, which TEXTILE WORLD first proposed in December, 1933, an opportunity would be afforded for the formation of a technical section. Meanwhile we believe that a series of joint meetings of the several technical associations connected with the industry would be interesting, stimulating, and productive.

The first meeting might well be held this fall. At it could be represented, as a nucleus, the American Association of Textile Chemists & Colorists, the Textile Division of the American Society of Mechanical Engineers, the U. S. Institute for Textile Research, Committee D-13 of the American Society for Testing Materials, and the Dye Division of the American Chemical Society. The program for this initial meeting would undoubtedly include one speaker from each of these organizations, who would outline its aims and activities. Probably it would also include a discussion of the way in which these activities can be better correlated.

If such a meeting is to materialize, someone—it matters little who—must start the ball rolling. We shall watch with interest to see which organization first beats the gun with an invitation to the others to join in arranging for this mass meeting of textile technologists.—*Editor.*

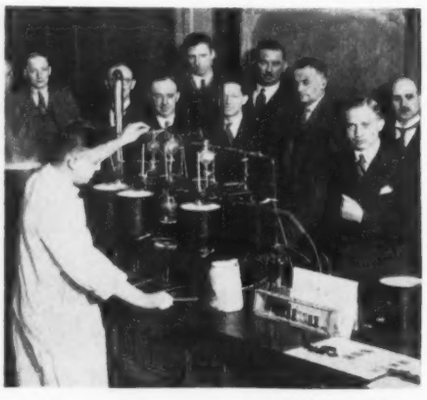
Effect of Dyeing and Finishing on Hosiery Durability

That dyeing and ageing decrease and certain finishing procedures increase the durability of silk hosiery, are among the interesting results of an investigation made by H. F. Schiefer and R. S. Cleveland, and reported in Research Paper RP 753 of the U. S. Bureau of Standards. Degummed hosiery tested three days after they were received at the Bureau had a durability of over 1000 cycles on the hosiery testing machine; after dyeing, a durability of 546 cycles. Degummed hosiery tested twenty days after receipt had a durability of 460 cycles; after dyeing, a durability of 147 cycles; after laundering, the durability of the degummed hosiery and the dyed hosiery rose to 777 and 470 cycles, respectively.

The tests showed marked differences in the effect of various finishes, the durability ranging from 120 to over 1000 cycles. Here again, laundering counteracted, in part at least, the effect of those finishes which had decreased the durability of the stockings. The effect of laundering on these stockings apparently confirms the claim which many women have made; namely, that they get better service from some of their stockings if they launder them before wearing.

A number of compounds are being sold to the consumer for treating stockings in the home to make them more durable, aluminum sulphate being one of these. Therefore samples were treated first in aluminum sulphate solution, dried, washed gently in a ½% solution of soap, and again dried. Silk stockings which, without the finish had a durability of less than 350 cycles, had a durability of more than 1000 cycles after this treatment. Rayon stockings were not affected.

The investigation indicated also that temperature of boarding has an effect in the durability, but this and other factors need further study.



Wide Word Photos

Demonstration of new technique for dyeing wool at laboratories of British Dyestuffs Corp. This low-temperature, turbulent solution method was described on this page last month. Man on right holding coat lapel is Dr. H. A. Thomas who developed the method.

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New Dyes

General Dyestuff Corp. announces the following new products: Anthra Cyanine Violet 4B, an acid dye giving clear shades of moderate fastness to light; Diazo Brilliant Blue BBLA, a developed color giving uniform shades on cotton and viscose; Fastusol Brown L3KA, a fast-to-light direct color; Wool Blue GN Extra, an acid color suitable also for silk; Indanthren Yellow 6GD Suprafix, a vat dye recommended primarily for printing; and Rapidogens Bordeaux IB, Yellow I3G, and Scarlet IL.

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Waterproofing Compound

Announcement of a water-repellent preparation developed especially for the textile trade is made by the Protexall Co., 430 Race St., Philadelphia, distributors of Thomas Holmes Products. Known as Dry-TEX-ol, this preparation is a finely divided emulsion which is applied in a single bath, either hot or cold, on any convenient equipment, such as a jig, padder, quetsch, or coating machine. It can also be sprayed or used in a standing bath as in the splash-proofing of hosiery. Goods may be fed into the bath either wet or dry. Dry-TEX-ol is said to penetrate the fibers quickly, making them permanently repellent, but leaving the pores of the fabric open.

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Leveling Agent

A new leveling agent, said to be of a different chemical constitution from those hitherto available, has been announced recently by General Dyestuff Corp., 230 Fifth Ave., New York. The most important applications of this compound, known as Peregal 0, are in conjunction with many vat colors as a leveling, stabilizing, and penetrating agent in dyeing, and as an assistant in stripping. It is also recommended by the manufacturer as a leveling agent for other classes of dyes, including basic dyes and colors for cellulose acetate. Pergosol 0 can be mixed with water in any proportion, is neutral in reaction, and is unaffected by hard water, acids, alkalis, and salts.

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Association Notes

At a joint meeting of the Rhode Island sections of the American Association of Textile Chemists & Colorists, and the American Chemical Society, held in Providence, R. I., March 29, Dr. George H. Gehman, medical director, E. I. duPont de Nemours & Co., discussed chemical industrial hazards and described the new laboratory of in-

dustrial toxicology recently erected by the duPont company.

At the spring meeting of the Southeastern Section of American Association of Textile Chemists & Colorists, in Atlanta, Ga., the following officers were elected: C. A. Jones, Georgia School of Technology, Atlanta, chairman; W. F. Christman, Russell Mfg. Co., Alexander City, Ala., vice-chairman; W. F. Crayton, Dimon Court Apt., Columbus, Ga., secretary; J. B. Farrell, Lanett (Ala.) Bleachery & Dye Works, treasurer.

Officers and board of the Piedmont Section of American Association of Textile Chemists & Colorists met at Greenville, S. C., April 13. Members from several states, in Greenville for Southern Textile Exposition, attended. The regular spring meeting of the section is set for May 5 at Greenville.

Use of Latex in the textile industry was discussed by Dr. M. C. Teague, of Naugatuck Chemical Co., March 29 at a meeting of the New York section of the A.A.T.C.C. Preceding the talk a motion picture, "The Romance of Rubber," was shown. N. H. Brewster, also of the Naugatuck Chemical Co. explained the various features of the picture.

Difficulties involved in the practice among manufacturers of also doing converting were discussed at a meeting called in New York, March 16, by the Textile Converters Association.

Approval of a plan for creation of a Board of Appeals in Paterson, N. J., to handle all labor difficulties among textile firms in that district was voted March 27, at a meeting of the Independent Dyers & Printers Association. The appointment of such a committee had been recommended to Mayor Hinchcliffe of Paterson by a committee which investigated the causes of the strike last September.

National Association of Finishers of Textile Fabrics in a brief filed last month with the Senate Committee on Education and Labor submitted an argument against the constitutionality of the National Labor Relations Act (Wagner labor bill). The bill was attacked on the grounds that it is so comprehensive in scope and revolutionary in character it later necessarily will be declared invalid; that the bill arbitrarily discriminates between employers and employees, that it fails to impose any restrictions on labor organizations in their negotiations and dealings with other employees and their employers, and that the broad investigatorial powers of the board and its agents are objectionable.

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NRA Jottings

Headquarters of the Silk and Rayon Dyers and Printers Code Authority have been moved from Empire State Building, New York, to the National Bank of America Building, Paterson, N. J. The change was made to bring the code authority closer to the industry.

Constitutionality of the code of the Silk and Rayon Dyeing and Printing industry is challenged in a suit filed in Newark, N. J., by eight Paterson silk dyeing firms against the code authority of the industry. The complaint asks for an injunction enjoining the Government from instituting suits or prosecution of indictments respecting alleged violations or failure of the firms to comply with code regulations.

The charge made by Philadelphia hosiery manufacturers that the processing code is inadequately enforced, is denied by **Wm. Schulze,** secretary of the Textile Processing Code Authority. He said that actually the hosiery code permits a $13 minimum wage for dyers while learning and the processing code has a minimum of $14.

Addition to the textile processing industry code of a clause empowering the code authority to collect certain statistical data from industry members has been approved by the NIRB. The data include all employee hour and wage information and complete figures in total units produced and sold.

NRA has approved an amendment to the textile processing code providing for appointment of a committee, including consumer and governmental representatives, to study the industry with a view to recommending classification and standards.

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Industry Briefs

Southern Bleachery & Print Works, Inc., of Taylors, S. C., paid a dividend of $1.75 on the preferred stock plus 48c. per share as interest. This dividend was due April 1, 1931, and was the first payment on dividends in arrears.

On the conclusion of its running-out program, the finishing and printing division of the Arkwright Corp., Fall River, Mass., will ship part of its equipment to Buenos Aires and part will be distributed among plants of the Merchants & Manufacturers, Inc., in various parts of this country.

Emergency conferences were being held early this month among leaders of the dyeing, finishing, and printing industry in an effort to solve the price situation which is declared to be the "most desperate" the trade has ever known.

Considerable easing up in the job printing situation was noted at the end of March and some firms reported that they were abreast of deliveries. Most firms, however, are still asking five weeks for shipments.

Judge Hanify, in Superior Court, Fall River, Mass., on March 18 sustained the bill in equity obtained by the Mt. Hope Finishing Co. against T. F. McMahon, F. J. Gorman, and other leaders of the United Textile Workers of America. The action by the finishing firm is an aftermath to the September, 1934, strike.

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Processing Plant News

Lanett (Ala.) **Bleachery & Dye Works** will soon begin superstructure for three-story and basement addition 77x93 ft., reinforced-concrete and mill type, for which general contract was let to Batson-Cook Co., West Point, Ga., estimated to cost over $50,000. A portion of unit will be used for storage service. J. E. Sirrine & Co., Greenville, S. C., are engineers.

Middlesex Bleach, Dye & Print Works, Inc., Somerville, Mass., recently chartered with capital of $120,000, will take over and succeed to the company of same name, with local mill on Somerville Ave. George L. Gilmore, owner of the plant, will be president of the new company; Kelsey G. Reed is vice-president, and James A. Munro, treasurer.

Susquehanna Dye & Print Works, West Haverstraw, N. Y., which is constructing a plant has been incorporated. Michael Kaufman, president of Niagara Print & Dye Works, is president of Susquehanna, which will specialize on pure-dye silks and rayons.

Delta Finishing Co., Philadelphia, has installed a large Inversand softening filter for clarifying and softening a portion of their city water supply.

Glenlyon Yarn Dye Works, Phillipsdale, R. I., is installing additional Hungerford & Terry water-softening equipment.

Gregg Dyeing Co., Graniteville, S. C., is installing a Sanforizing machine.

Union Bleachery, Greenville, S. C., has laid foundation for new filtering plant to contain five new beds; work to be completed by Aug. 1.

Powhatan Converting Works, Inc., Martinsville, Va., recently organized with capital of $1,000,000 by H. A. Ford and A. L. Tuggle, both of Martinsville, is concluding arrangements for acquiring a tract of land about one mile from city limits, located on Smith's River, as site for a new dye and finishing mill, to specialize largely in rayon goods. It is said to be allied with a large New Jersey corporation. Initial plant will consist of several one-story buildings with power house, and is reported to cost in excess of $150,000, including equipment; 400 will be employed and capacity will be 1,000 pieces of goods daily.

PROCESSING IN THIS ISSUE

	page
Revamping Bleach House Equipment for Efficiency	92
Simplified Routine for Finishing Jersey Cloth	108
Single Bath Hosiery Dyeing with Sulphon Cyanine	110
Vat Dyes on Jersey	124
Dye Not Fast	124
Rayon Creping Unsatisfactory	125
Hosiery Dyes Unevenly	125
Improved Carbonizer and Stock Dryer	129

TEXTILE WORLD'S

Engineering Digest

EVEN though one of the newer departments of TEXTILE WORLD, this Engineering Digest already has a number of staunch friends and contributors. We want to see the list grow. Consequently we invite "kinks," news items and other correspondence from all engaged in the power, engineering, maintenance and repair departments of textile mills.

This is your department and you are urged to move in.—*Editor.*

Used-Machinery Outlook

With certain cotton-mill liquidations taking place in the southeastern section of New England, and with rumors of further liquidations in the air, it is small wonder that questions are being asked as to the status of the used-machinery market. It is only necessary to mention the American Printing Co., with 5,746 looms, and B. B. & R. Knight Co., with 3,881 looms, to make it obvious that there is a great deal of used machinery to be digested, and mention of these two by no means ends the list.

Under the circumstances it might be expected that the market has a large headache. It has—but only in spots. To be specific:

1. The demand has been good for modern used machinery, particularly high-speed sheeting looms and for production of fancies. Equipment of this type has sold rapidly, considering the unsettled conditions in the industry, and desirable lots have been snapped up.

2. Demand has been fair for the older looms designed to produce print cloth and sheetings. Most such looms on the market are considered modern but there are so many available that digestion will be slow unless business spurts.

3. Since a contributing factor to a number of the liquidations has been obsolete equipment, especially in the preparatory and spinning departments, there is bound to be a sizable mass of such equipment waiting for a buyer. The market here is poor and this fact has erroneously led many to believe that the whole used-machinery situation is sour. As pointed out, this is not entirely true.

Shipping machinery to foreign countries makes interesting news items, but such shipments are not particularly important at present. New England mills have been buying the best of the fancy looms to replace older equipment, and southern mills the best of the plain automatics for purposes of expansion. This applies also to auxiliary machinery.

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About Lighting

A handbook put out by the U. S. Department of Labor, "State Requirements for Industrial Lighting," not only gives summaries of the various State laws bearing on the subject but also discusses correct lighting and gives recommended standards for textile mills.

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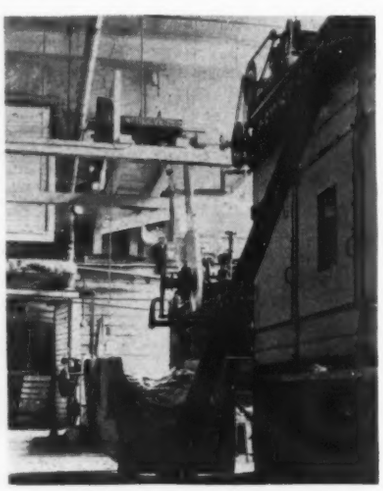
Synchronizing Dryer And Carbonizer

Kezar Falls Woolen Co., Kezar Falls, Me., recently installed a dryer and carbonizer which are operated in range so that the cloth goes directly from the dryer into the carbonizer without further handling. As different kinds of cloth require different speeds through the dryer, and as the speed of the carbonizer must have a definite relation to that of the dryer, it was necessary to provide for very accurate speed control. This has been accomplished by installing two variable-speed transmission units.

One unit is belted direct from the motor and controls the speed of the dryer. The variable-speed shaft of this unit has two pulleys, one to drive the dryer and the other to drive the constant speed shaft of the second variable-speed transmission unit mounted on the carbonizer. Thus the speed of the dryer is first adjusted for the cloth going through and then the second unit is adjusted to synchronize the speed of the carbonizer with that of the dryer.



Dryer and carbonizer at Kezar Falls operated in range

As shown in the photograph, all the drive equipment is mounted on an overhead platform above the dryer, except the variable-speed unit for the carbonizer which is mounted on top of that machine. F.A.W.

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Ball-Thrust Bearings Reduce Weave Costs

In an item on page 110 of our Annual Review and Forecast Number (Feb. 28), it was stated that one mill had been able to reduce power costs $1,665 per year by the substitution of ball-thrust for friction bearings on loom motors. The saving was real, but the statement was misleading, as the substitution actually was made on the looms themselves and not on the motors.

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Protecting Valves on Blow-Off Lines

Every power-plant engineer knows that leakage of water, with resultant wear on the seats and disks of valves on boiler blow-off lines and on the gage-glass and water-column blow-off lines, is common, troublesome and expensive. Not only is the item of maintenance expense considerable, but of even greater importance is the loss of water at boiler temperature due to this leakage. The valves on each of these three connections are normally closed. Dirt and scale collect in the pipes between the intervals of blow-off and, when passing through the valves at the time of opening, tend to score and cut the seats and disks. These losses and troubles can be lessened materially by observing the following procedure:

A short time after the valves have been opened, the lines blown off and the valves closed as tightly as then possible, say half an hour, the operator should go around and tighten the valves. The valve has cooled and it will be found that the wheel that could be turned no more when the valve was hot can be turned quite appreciably when the valve has cooled. The slight leakage that goes on after the valve has cooled, if it is not further closed, is responsible for much of the wear on the seats and disks. C. L.

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Making Sure of Sure Footing

Plain, flat, steel plates are used for truckways, door sills, loading-platform toeboards, etc., in many plants. Even a comparatively slight amount of wear gives such plates a high polish and they become slippery, particularly when wet or greasy. *Oxy-Acetylene Tips*, published by Linde Air Products Co., suggests a remedy which may be applied in a few minutes and while the plate remains in place:

Hold the flame of the oxy-acetylene

torch in one spot on the steel plate until the spot just melts, then rapidly remove the flame. Do the same thing to as many spots as desired, placing the pits, for example, about 1 in. apart in both directions, either in straight or alternate rows.

It is said that the rough edges of these artificial pit-marks give a long-wearing roughness which will prevent slipping, and that the degree of roughness can be varied to suit conditions.

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Age of Power Generation Equipment in 454 Plants in 14 Major Industries

Industry	Ages in Years		
	1 to 10	11 to 20	20 plus
Food	24%	33%	43%
Textiles	20	43	37
Forest products	38	26	36
Paper	31	44	25
Chemicals	44	46	10
Petroleum and coal products	39	53	8
Rubber	23	60	17
Leather	27	42	31
Stone, clay, glass products	51	27	22
Iron and steel	18	33	49
Non-ferrous metals	18	51	31
Machinery	23	40	37
Transportation equipment	39	39	22
Miscellaneous	42	29	29

—*Factory Management & Maintenance*

•

What About Feedwater Heaters for Small Plants?

The value of feedwater heaters in medium- and large-size power plants is well recognized, but operators of small plants sometimes conclude that this type of equipment is too expensive. If fuel is very cheap or the amount of make-up water small, the conclusion may be justified, states *Armstrong Trap Magazine,* but it does not necessarily hold just because the plant is small.

Questions of this kind can only be decided by considering the detrimental effects of cold feedwater as well as the actual fuel savings possible. Cold feedwater has the effect of reducing the capacity of a boiler and it also sets up strains and stresses due to temperature change when it enters the boiler.

The accompanying table gives approximate fuel savings for various increases in temperature and with 200 lb. boiler pressure.

Temperature of water entering heater	Temperature of Water Leaving Heater									
	120	140	160	180	200	220	240	260	280	300
	(Percentage saved in fuel, approximate)									
40	6.7	8.4	10.0	11.7	13.4	15.1	16.8	18.5	20.2	21.9
50	5.8	7.6	9.3	11.0	12.7	14.4	16.1	17.8	19.5	21.3
60	5.1	6.8	8.5	10.2	11.9	13.6	15.5	17.1	18.9	20.5
70	4.3	6.0	7.7	9.4	11.3	12.9	14.7	16.4	18.2	19.9
80	3.5	5.2	6.9	8.7	10.4	12.2	13.9	15.7	17.4	19.2
90	2.6	4.4	6.1	7.9	9.6	11.4	13.2	14.9	16.7	18.5
100	1.8	3.5	5.3	7.0	8.8	10.6	12.4	14.2	16.0	17.8

ENGINEERING IN THIS ISSUE

	page
Tragic Future for Mill Unable to Modernize	84
Revamping Bleach-House Equipment for Efficiency	92
Buy Coal on Basis of Heat Units per Dollar	119
Motorized Reducers	128
New Suction Pump	129

Packing Screw to Save Cussing

A simple, universal-jointed, packing screw for hard-to-get-at packing on pumps or piston-rod packing boxes is described in *Power.* It is made from a coarse-thread, large-size, wood screw and a couple of pieces of cold-rolled, round rod about the same diameter as the body of the screw. Two flat sides are filed on the screw head, as at *A* in Fig. 1. A shank, as at *B,*

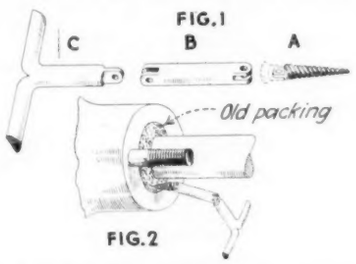

FIG.1

FIG.2

slotted and drilled for a tee handle, as at *C,* is made by sawing, splitting and bending. The pieces put together with pins complete the tool, shown in Fig. 2.

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Some Clutch Factors

General figures on the torque capacity which friction clutches should have for various types of installations are given in a pamphlet "Selecting the Clutch," published by the Twin Disc Clutch Co., Racine, Wis.

The first point brought out is that any friction clutch, in order to overcome the inertia of starting, should have a factor of 2, or a minimum torque capacity at least twice that of the torque transmitted to it. In addition there are factors which must be allowed for various types of mechanism. These factors are for the connected mechanism and must be added to the pick-up factor. In the table of such factors given below it must be understood that the figures are average values, subject to modification because of particular conditions:

Textile Looms, etc.	1.5
Dryers and Calenders	2.0
Generator, steady load	1.0
Generator, fluctuating	1.5
Blower	1.0
Centrifugal Pump	1.0
Lineshaft (driven by belt or gears)	1.5

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Engineering Trade News

Boiler Engineering Co., Newark, N. J., has discontinued business and in future the Beco -Turner Baffle Walls will be installed by **Plibrico Jointless Firebrick Co.,** 1800 Kingsbury St., Chicago.

Bond Foundry & Machine Co., Manheim, Pa., and **Charles Bond Co.,** Philadelphia, have appointed **Carter, Milchman & Frank, Inc.,** as distributor for the New York territory.

Perkins-Goodwin Co. has moved its New York office to 30 Rockefeller Plaza.

Copper & Brass Research Institute has moved its office to 420 Lexington Ave., New York.

Republic Steel Corp., Youngstown, O., has announced the appointment of **Atlas Supply Co., Inc.,** 35-39 Woodward Ave., Brooklyn, N. Y., as warehouse distributors of rust-resisting Toncan Iron sheets.

Reading Iron Co. has announced that S. H. Blackwood, formerly assistant district sales representative in the New York territory, has been made district sales representative in southern territory with headquarters at 1104 Continental Bldg., Baltimore, Md.

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Engineering Mill News

Rock Hill (S. C.) **Bleachery & Dye Co.** has awarded general contract to the A. K. Adams Co., 542 Plum St., N.W., Atlanta, Ga., for new one-story boiler plant, 25x27 ft., and will soon begin superstructure. Cost about $24,000, with equipment. Robert & Co., Inc., Atlanta, are engineers.

DuPont Rayon Co., Ampthill, Va., is building a highway bridge over a railroad to eliminate a grade crossing on the road to the plant from the Richmond-Petersburg Turnpike. The company is undertaking this public improvement to enhance the safety of its employees.

Chippewa Falls (Wis.) **Woolen Mill Co.** plans addition to power house, with installation of new engine and boiler room equipment. Work is scheduled to begin soon. Carl Volkman, 130½ South Barstow St., Eau Claire, Wis., is architect.

QUOTATIONS

At close of business, April 1, 1935

Prices cover average qualities unless otherwise stated

Cotton Goods

	Apr. 1	Mar. 1	Apr. 1
PRINT CLOTHS			
27-in., 64x60, 7.60	4 11/16	4 7/8	4 1/4
38½-in., 64x60, 5.35	6 1/4	6 5/8	6 1/2
39-in., 68x72, 4.75	7	7 3/8	7 1/8
39-in., 72x76, 4.25	8 1/4	8 1/4	8 1/2
39-in., 80x80, 4.00	8 1/2	9 1/2	8 3/4
BROWN SHEETINGS			
36-in., 56x60, 4.00	7 1/4	8	7 1/2
36-in., 48x48, 5.00	5 3/4	6 1/4	6 1/2
37-in. 48x48, 4.00	7	7 1/4	7 1/2
MISCELLANEOUS			
Drills, 73-in., 3 yd	9 1/2	9 3/4	9 1/2
Denims, 2.20	13 1/2	16	14 1/2
Tickings, 8 oz.	19	18 1/2	18 1/2
Standard prints	7	7 1/2	7 1/4

Tax included.

Cotton Waste

Peeler comber	13.25
Peeler strip	13.00
White spooler (single)	7.00
Linters (Mill Run Average)	5.50

Cotton Prices

Spot Cotton at:	Apr. 1	Mar. 1	For Month High	For Month Low	1934 Apr. 1
New York	11.30	12.60	12.60	10.65	6.40
New Orleans	11.30	12.70	12.70	10.55	6.33
Liverpool	6.34	7.09	7.20	6.25	5.06

FLUCTUATIONS OF FUTURES

	Closed Apr. 1	For Month High	For Month Low	Closed Mar. 1	Net Change
April	10.95	12.42	10.30	12.42	—1.47
May	11.00	12.48	10.32	12.48	—1.48
June	11.02	12.50	10.37	12.50	—1.48
July	11.04	12.54	10.42	12.54	—1.50
Aug	10.86	12.52	10.30	12.52	—1.66
Sept	10.68	12.50	10.18	12.50	—1.82
Oct	10.50	12.48	10.06	12.48	—1.90
Nov	10.49	12.51	10.09	12.51	—2.02
Dec	10.50	12.55	10.12	12.55	—2.05

AVERAGE PRICE JUNE-JULY SHIPMENT HARD WESTERN COTTON

	F.o.b. New England Middling	St. Middling
1 1/4-in	13.75	14.75
1 3/16-in	15.25	17.00
1 1/4-in	17.50	19.50

FOREIGN COTTONS

Alexandria Exchange, April 1	
May, Sak	14.29
April 1 Uppers	12.45
Shipment c.i.f. Boston (Tariff not included)	
Medium Sak	23 1/4
Medium Uppers	23
(By Anderson, Clayton & Co.)	
India Rough, Calcutta Camilla	9.75
China Tientsin No. 1	13.25

Quotations on cotton cloth and cotton yarn as given on this page include the cotton processing tax. Cotton waste prices also include the processing tax but of course the prices on various raw cottons do not include it.

Cotton Yarn (Nominal)

(Tax Added)

CARDED—(Average Quality)

Double Carded 2c—4c., higher according to quality

SINGLE SKEINS OF TUBES (Warp Twist)

4s to 8s	$0.25 1/2	20s	$0.28 1/2
10s	.26	24s	.30 1/2
12s	.26 1/2	26s	.31 1/2
16s	.27 1/2	30s	.33 1/2

TWO-PLY SKEINS AND TUBES

8s-2	$0.26	20s-2	$0.29
10s-2	.26 1/2	24s-2	.31
14s-2	.27 1/2	30s-2	.34
16s-2	.28	40s-2	.40

SINGLE WARPS

10s	$0.26 1/2	20s	$0.29
14s	.27 1/2	24s	.31
16s	.28	30s	.34

TWO-PLY WARPS

8s-2	$0.26 1/2	20s-2	$0.29 1/2
10s-2	.27	24s-2	.31 1/2
14s-2	.28	30s-2	.34 1/2
16s-2	.28 1/2	40s-2 ordin	.40 1/2

HOSIERY CONES (Frame Spun)

8s	$0.26	18s	$0.28 1/2
10s	.26 1/2	20s	.29 1/2
12s	.27	22s	.30 1/2
14s	.27 1/2	24s	.31 1/2
16s	.28	26s	.32 1/2

COMBED PEELER (Average Quality)

TWO-PLY—(Knitting Twist) Cones

20s-2	$0.36	50s-2	$0.49
30s-2	.40	60s-2	.55
40s-2	.46	80s-2	.75

WARPS, SKEINS AND CONES

TWO PLY—(Warp Twist)

20s-2	$0.36 1/2	50s-2	$0.50
30s-2	.40 1/2	60s-2	.56
36s-2	.44 1/2	70s-2	.66
40s-2	.46 1/2	80s-2	.76

SINGLES

14s	$0.33 1/2	38s	$0.44
20s	.35	40s	.45
28s	.38 1/2	50s	.50
30s	.39	60s	.56

MERCERIZED CONES—(Combed, Ungassed)

30s-2	$0.52	60s-2	$0.70
40s-2	.57	80s-2	.96

Raw Silk

Prices Nominal

	13/15 White	20/22 White	20/22 Yellow
Special Grand, 85%	1.60	1.32	1.25
Grand XX, 83%	1.47	1.29	1.23
Special Crack, 81%	1.39	1.26	1.21
Crack XX, 78%	1.34	1.24	1.20
Extra, Extra, 73%	1.32	1.22	1.19
Best Extra, 68%	1.30	....	....

RAW SILK EXCHANGE

	Apr. 1	Mar. 1	For Month High	For Month Low	Net Change
April 1	1.27	1.33	1.33	1.26 1/2	—0.06
May	1.27	1.33	1.33	1.27	—0.06
June	1.26 1/2	1.33	1.33	1.26	—0.06 1/2
July	1.26 1/2	1.33	1.33	1.26	—0.06 1/2
Aug	1.26 1/2	1.33 1/2	1.33 1/2	1.26	—0.07
Sept	1.26	1.33 1/2	1.33 1/2	1.26	—0.07 1/2
Oct	1.26	1.33 1/2	1.33 1/2	1.26	—0.07 1/2

Silk Yarns

Hosiery tram, 5thd. Japan, 85%	$2.20
Hosiery tram, 5thd. crack XX, 78%	1.95
60/2 spun silk	2.75

RAYON WASTE

Thread (for garnetting)	$0.15

Wool

OHIO, PENNSYLVANIA, ETC. (GREASE)

Fine delne	$0.26–$0.27	¾ blood	$0.26–$0.26 1/2
Fine clthg	.20– .21	½ blood	.23– .23 1/2
¼ blood	.27– .27 1/2		

TEXAS AND CALIFORNIA (CLEAN)

Texas, 12 months	$0.61–$0.63
California, Northern	.56– .58

MONTANA, IDAHO, WYOMING (CLEAN)

Staple fine	$0.65–$0.66
Staple ½ bld	.63– .65
Fine and fine medium (original bag)	.61– .63
¾ blood	.55– .56
¼ blood	.50– .52

EASTERN SCOURED PULLINGS

A.A	$0.63–$0.65	B-Super.	$0.52–$0.57
A-Super	.58– .60	C-Super.	.48– .50

CARPET WOOL (Nominal)

Aleppo (clean)	$0.16–$0.19
Sining	.09– .13
China filling (clean)	.08– .13

Tops and Noils

TOPS—BOSTON

Fine (64-66s)	$0.85–$0.87
Half-blood (60-62s)	.81– .83
Aver. ¾ blood (56s)	.71– .73
¼ blood (50s)	.58– .60

NEW YORK TOP FUTURES

	Closed Apr. 1	For Month High	For Month Low	Closed Mar. 1
April	74.0	74.5	72.0	73.1
May	73.5	74.0	72.1	73.2
June	73.0	73.5	72.6	73.3
July	73.5	73.5	73.1	74.0
Aug	73.2	73.2	73.2	74.1

TOPS—BRADFORD ENG. April 1

Fine (64s)	24 1/2d	¾ bld. (56s)	17 1/2d
½ bld. (60s)	23 d	¼ bld. (50s)	13 1/2d

NOILS—BOSTON

Fine	$0.51–$0.53	¾ bld	$0.43–$0.45
Half bld	.46– .48	¼ bld	.38– .42

Worsted Yarns

ENGLISH SYSTEM WEAVING

2-20s 44s	$0.90 –$0.95	2-36s 58s	$1.22 1/2–$1.25
2-30s 46s	.97 1/2– 1.02 1/2	2-40s 60s	1.27 1/2– 1.30
2-30s mixes	1.30 – 1.35	2-50s 64s	1.40 – 1.45

ENGLISH SYSTEM KNITTING

2-20s 44s	$0.80 –$0.85	2-20s 60s	$1.05 –$1.10
2-20s 50s	.85 – .90	2-20s 64s	1.10 – 1.15

FRENCH SYSTEM

1-26s 64s	$1.10 –$1.15	2-40s 64s Zephyrs	$1.35 –$1.40
1-30s 64s warp	1.25 – 1.30	2-50s 66s	1.52 1/2– 1.57 1/2

Domestic Rayon (Skeins)

VISCOSE PROCESS

Denier	Filament	Price	Denier	Filament	Price
50	14	$1.17	150	24–40	$0.60
75	30	.92	150	60	.62
100	40	.80	300	44	.49
125	36	.67			

ACETATE PROCESS

Denier	Price	Denier	Price
45	$1.20	100	$0.85
55–65	1.15	120–125	.73 – .77
75	1.00	150	.67 – .70

CUPRAMMONIUM PROCESS (TWISTED)

Denier	Filament	Price	Denier	Filament	Price
30	24	$1.50	100	75	$0.80–$0.90
75	60	.95–$1.05	150	112	.65– .75